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PROCEEDINGS

OF THE

Biological Society of Washington

VOLUME XIV

1901

WASHINGTON
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1902

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*Vice C. L. Pollard who served in this position from January, 1901 to October, 1901.

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OFFICERS AND COUNCIL

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

For 1901.

(ELECTED DECEMBER 29, 1900.)

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*Ex-Presidents of the Society.
†Resigned Oct., 1901, succeeded by W. P. HAY.

VOL. XIV, PP. VII-XII JANUARY 20, 1902

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

PROCEEDINGS.

The Society meets in the Assembly Hall of the Cosmos Club on alternate Saturdays at 8 p. m. Brief notices of the meetings, with abstracts of the papers, are published in *Science*.

January 12, 1901—332d Meeting.

The President in the chair and 30 persons present.

W. H. Dall exhibited X ray photographs showing the inner structure of shells.

Vernon Bailey exhibited a plume hunters' skin of a grebe.

The following communications were presented:

Frank Cameron: The Formation of Black Alkali in Plants.*

T. H. Kearney: The Effect of Alkali Salts on the Growth of Seedling Plants.*

O. F. Cook: The Origin of the Cocoanut.†

January 26, 1901—333d Meeting.

The President in the chair and 48 persons present.

The program for the evening consisted of a discussion of the subject, 'Former Land Connections Between Asia and North America,' with the following speakers: F. A. Lucas, Theo. Gill, W. H. Dall, F. V. Coville, and L. Stejneger.

*U. S. Dept. Agric. Report No. 71—under the title, Some Mutual Relations Between Alkali Soils and Vegetation.

†Cont. U. S. Nat. Herb. VII, No. 2, pp. 257–293, 1901.

February 9, 1901—334th Meeting.

The President in the chair and 50 persons present.

The following communication was presented:

H. C. Oberholser: A Naturalist in the Catskills (illustrated by lantern slides).

The remainder of the evening was devoted to further discussion of the subject 'Former Land Connections between Asia and North America,' with the following speakers: Theo. Gill, Vernon Bailey, B. W. Evermann, and Alpheus Hyatt.

February 23, 1901—335th Meeting.

The President in the chair and 28 persons present.

B. W. Evermann outlined some observations on the activity of aquatic plants in winter.

Wm. H. Ashmead stated some results of work upon the Hymenoptera obtained by the Harriman Alaska Expedition.

E. L. Morris exhibited photographs of botanical type specimens.

The following communications were presented:

F. A. Lucas: A Fossil Flightless Auk.*

W. P. Hay: The Distribution and Classification of the North American Crayfishes.

M. B. Waite: Influence of Vegetation on the Sand Formations of the Michigan Lake Shore.

March 9, 1901—336th Meeting.

The President in the chair and 31 persons present.

C. W. Stiles stated some preliminary results of investigations of diseases of sheep and cattle in Texas.

The following communications were presented:

B. W. Evermann: The Feeding Habits of the Coot and Other Water Birds.

O. F. Cook: More about the Cocoanut.

A. H. Howell: Notes on the Distribution and Nomenclature of North American Skunks.†

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*Proc. U. S. Nat. Mus. XXIV, 133-134, figs. 1-3, 1901.

†North Am. Fauna No. 20, pp. 1–45, Aug. 31, 1901.

March 23, 1901—337th Meeting.

The President in the chair and 41 persons present.

The following communications were presented:

S. D. Judd: Bird Food Problems (illustrated by lantern slides).

F. A. Lucas: Some Restorations of Dinosaurs (illustrated by lantern slides).

April 6, 1901—338th Meeting.

The President in the chair and 40 persons present.

The following communication was presented:

Erwin F. Smith: The Bacterial Diseases of Plants* (illustrated by lantern slides).

April 20, 1901—339th Meeting.

The President in the chair and 26 persons present.

The following communications were presented:

O. F. Cook: The Shading of Coffee.†

C. L. Pollard: Some Strange Methods of Plant Naming.‡

Theo. Gill: On the Mode of Progression and Habits of Some Dinosaurs.

May 4, 1901—340th Meeting.

Vice President Ashmead in the chair and 25 persons present.

The following communications were presented:

T. H. Kearney: Loeb's Investigations into the Action of Ions upon Animal Structures, as Supplemented by Studies with Seedling Plants.

O. F. Cook: A Kinetic Theory of Evolution.§

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*Published in part in Centralblatt. f. Bakteriologie, 2te Abth. VII Bd., pp. 88, 128, 190, 1901.

†Bull. No. 25, Div. of Botany, U. S. Dept. Agric., 1901.

‡Science, N. S., XIV, 280–285, Aug. 23, 1901.

§Science, N. S., XIII, 969–978, June, 1901.

October 19, 1901—341st Meeting.

Vice President Ashmead in the chair and 21 persons present.

The following communications were presented:

C. W. Stiles: The Recent International Zoological Congress.

W. H. Ashmead: An Entomologist in the Sandwich Islands.

Theo. Gill: Some Difficulties of Nomenclature at the Zoological Congress.

November 2, 1901—342d Meeting.

The President in the chair and 39 persons present:

H. J. Webber exhibited a diseased pineapple and discussed the cause of the condition.

The following communications were presented:

Charles Louis Pollard: Notes on a Trip to Mount Mitchell.

H. J. Webber: A Cowpea Resistant to Root Knot Worm.*

Frederick V. Coville: Exhibition of Specimens of Alaskan Willows.

M. A. Carleton: Characteristics and Distribution of Xerophytic Wheats.†

November 16, 1901—343d Meeting.

The President in the chair and 28 persons present.

C. P. Hartley exhibited some malformed ears of corn grown from seed taken from ears similarly abnormal.

H. E. Van Deman exhibited a specimen of the ripe fruit of guava grown in Florida.

L. O. Howard announced that he had just learned through a letter from C. L. Marlatt that the original habitat of the San Jose scale insect had been found to be in China.

The following communications were presented:

H. G. Dyar: Notes on Mosquito Larvae.

Vernon Bailey: The Little Deer of the Chisos Mountains, Texas, with exhibition of specimens.

Barton W. Evermann: Birds in the Dry Season.

C. B. Simpson: Some Observations on Jack Rabbits.

*To be published as a Bulletin of the Bureau of Plant Industry, U. S. Dept. Agric.

†Bull. No. 3, Bureau Pl. Ind., U. S. Dept. Agric., under the title, Macaroni Wheats.

November 30, 1901—344th Meeting.

The President in the chair and 72 persons present.

William Palmer exhibited some plaster moulds of reptiles and batrachians which had been used for the purpose of misrepresenting facts by a newspaper writer.

The following communications were presented:

E. W. Nelson: A Naturalist in Yucatan.

H. J. Webber: The Strand Flora of Florida.

December 14, 1901—345th Meeting.

The President in the chair and 27 persons present.

The following communications were presented:

W. H. Holmes: Finds of Fossil Remains and Indian Implements in a Spring at Afton, Indian Territory.

W. A. Orton: The Wilt Disease of the Cowpea and its Control.*

Theo. Gill and C. H. Townsend: The Largest Deep Sea Fish.†

William Palmer: A Study of Two 'Ghosts'.

December 28, 1901—346th Meeting.

(TWENTY-SECOND ANNUAL MEETING.)

The President in the chair and 13 members present.

The annual reports of the Recording Secretary and Treasurer for the year 1901 were read and approved. The following officers were then elected for the ensuing year:

President F. A. Lucas.

Vice-presidents: B. W. Evermann, W. H. Ashmead, F. H. Knowlton, T. S. Palmer.

Recording Secretary: W. H. Osgood.

Corresponding Secretary: T. W. Stanton.

Treasurer: David White.

Members of the Council: A. F. Woods, C. L. Pollard, M. B. Waite, H. J. Webber, W. P. Hay.

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*To be published as a bulletin Bureau Plant Industry, U. S. Dept., Agric.

†Science, N. S. XIV, 937, Dec. 13, 1901.

The president then announced the following committees:

Committee on Communications: W. H. Osgood, B. W. Evermann, A. F. Woods, V. K. Chesnut.

Committee on Publications: W. P. Hay, T. S. Palmer, David White.

VOL. XIV, PP. 1-6 MARCH 9, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

RIBES COLORADENSE, AN UNDESCRIBED CURRANT FROM THE ROCKY MOUNTAINS OF COLORADO.

BY FREDERICK V. COVILLE.

Several months ago in examining a collection of Ribes made by Mr. C. L. Shear in Colorado in 1896 and 1897, I found a fruiting specimen of the Rocky Mountain plant that has hitherto been identified by botanists with the species of the eastern United States, *R. prostratum* L'Her. The specimen had, however, black instead of red fruit, and on a critical examination other differences were developed. A search in the herbarium brought to light a few other specimens of this plant, in flower as well as in fruit, which have furnished excellent material for description, but the surprising fact was developed that the fruiting specimens on the type sheet of *Ribes wolfii* Rothr., which is in the National Herbarium, were identical with our plant. It became necessary, therefore, to make a critical examination of Dr. Rothrock's species.

*Ribes wolfii** was described from specimens collected in Colorado, those in flower from Mosquito Pass, those in fruit from

*Rothrock, Am. Nat. 8 :358. 1874.

Twin Lakes,† and these specimens are now known to represent two distinct species. Dr. Rothrock cited also, as synonymous, a third plant, Watson's *Ribes sanguineum variegatum*,‡ a citation which led Dr. Watson later to reject Dr. Rothrock's species.§ The name *Ribes wolfii* has consequently disappeared from most botanical works. In this confusion it becomes necessary to restrict the use of the name and I therefore designate as the type of *Ribes wolfii* the flowering specimen in the National Herbarium collected by John Wolf in June, 1873, at Mosquito Pass, a few miles east of Leadville, Colorado, at an elevation between 10,000 and 11,000 feet. I have found *Ribes wolfii* in herbaria under the names *prostratum*, *viscossissimum*, and *hudsonianum*, with none of which species is it very closely related. Its nearest relative is Watson's *Ribes sanguineum variegatum*, a plant centering about the northern Sierra Nevada of California and distinct from true *sanguineum*. There is a question as to the proper name of this plant, which at the present time can not be satisfactorily determined. It may, therefore, continue to be called *Ribes sanguineum variegatum* until its correct name as a species can be definitely ascertained. Both *variegatum* and *wolfii* are plants with unarmed stems, almost smooth, maple-like leaf-blades, racemose inflorescence, the bracts ovate or obovate and with thin hyaline margins, ovaries and fruit bearing glanduliferous hairs, flowers greenish or reddish, and calyx-tube not more than 3 mm. long and shorter than the lobes. *Wolfii* differs from *variegatum*, however, in its usually greenish-white calyx about 5 mm. long, its tube about 1 mm. long and the lobes about 3 or 4 times the length of the tube; petals broadly rhombic-obovate, about a third the length of the calyx lobes; and anthers, when fully expanded, a little broader than long. I have seen no mature fruit of the species. *Ribes sanguineum variegatum* has a usually red calyx about 6 mm. long, the tube about 2 mm. long, and the lobes about 1½ to 2 times

†The localities are attached to the proper specimens through a comparison of the data furnished by Rothrock's original description, by the label on the specimens, and by the references to Wolf's itinerary given in the Report of the Secretary of War for 1873, volume 2, part 2, pages 483 and 484.

‡Wats. Bot. King Surv. 100. 1871.

§Wats. Bibl. Ind. 337. 1878

the length of the tube; petals oblong-ovate, about two-thirds the length of the calyx lobes; and anthers when expanded usually much longer than broad.

The specimens of *Ribes wolfii* that I have examined, in the National and Columbia University herbaria, and that of Mr. Frank Tweedy, are as follows:

Colorado:

Mosquito Pass, near Leadville, alt. 10,000 to 11,000 feet, *John Wolf*, 1873.

Hinsdale County, *F. N. Pease*, 1878.

Ouray County, near Silverton, on the headwaters of the Rio Las Animas, alt. 9,600 feet, *Frank Tweedy*, 1895 (No. 195).

Ouray County, Mt. Abram, alt. 10,500 feet, *C. L. Shear*, 1897 (No. 3195).

West La Plata Mountains, Bear Creek Divide, alt. 11,500 feet, *Baker*, *Earle*, and *Tracy*, 1898 (No. 220).

Utah:

Wasatch Mountains, alt. 9,000 feet, *Sereno Watson*, 1869 (No. 377).

Wasatch Mountains, American Fork Canyon, alt. 9,500 *Marcus E. Jones*, 1880.

Mountains east of Gunnison, alt. 9,500 feet, *Lester F. Ward*, 1875 (No. 274).

"Central Utah, &c.," *C. C. Parry*, 1875.

Ribes wolfii having thus been delimited, the plant confounded with it by Rothrock, and by most authors referred to *Ribes prostratum* L'Her., is here described.

Ribes coloradense sp. nov.

Plant apparently procumbent; stems devoid of spines and prickles, at first minutely pubescent and bearing some sessile glands, the thin silvery epidermis persisting for a few years over the brown bark; petioles commonly 3 to 6 cm. long, usually smooth on the back, the upper sides pubescent and glandular like the young twigs, the margins of the sheathing portion provided with a few large, gland-tipped bristles; leaf-blades

commonly 4 to 7 mm. in width, cordate-reniform in general outline, 5-lobed, smooth on both surfaces, except sometimes for a very sparse pubescence on the veins beneath and on the margins, and with scattered minute sessile glands, the lobes ovate-triangular, bluntly acute or obtuse, doubly crenate-dentate; flowers from buds situated below those producing the leaves, but occasionally developing a single rudimentary leaf; racemes loosely 6 to 12-flowered, the pedicels commonly 4 to 8 mm. long and like the main axis glandular-hairy and minutely pubescent; bracts narrowly linear to lanceolate-subulate, thick and herbaceous, not exceeding half the length of the pedicel, the lowermost one occasionally developing into a miniature leaf-blade; ovary glandular-hairy; calyx lobes widely spreading, slightly united at the base, ovate-rotund, slightly narrowed below to a very broad base, sparingly hairy on the outside with both gland-bearing and glandless hairs, greenish or somewhat purplish, the diameter of the open flower about 6 to 8 mm.; petals smooth, purplish, about 1 mm. long by 1.5 to 2 mm. broad, slenderly fan-shaped with much incurved sides; filaments smooth, of nearly uniform width throughout, about 1.2 mm. long, the anthers orbicular, a little less than 1 mm. in diameter; styles smooth, separate to the base, about 1.2 mm. long; fruit spherical, black without bloom, sparingly glandular-hairy, in our dried and flattened but not crushed specimens 6 to 10 mm. in diameter.

Type specimen in the United States National Herbarium, collected July 27, 1896, in a moist shady place in Marshall Pass, Colorado, at an altitude of about 10,500 feet, by C. L. Shear (No. 1156).

With *Ribes wolfii* the present species has no immediate relationship. Its racemes are developed from usually leafless lateral buds on one-year-old wood and its calyx has widely spreading lobes and no evident tube. It has several other distinguishing characters, perhaps the most conspicuous of which are the subulate-lanceolate thick green bracts of the inflorescence, and the sparsity of the ovary hairs tipped with purple glands. *Wolfii* has its racemes borne on short leafy branches, the calyx tube well defined though short, and the lobes only moderately spreading, the ovate or obovate-lanceolate, obtuse or broadly acute bracts with thin semi-transparent margins, and the ovary densely covered with yellowish-green stalked glands. To *Ribes prostratum*, however, and to *Ribes laxiflorum* Pursh our new species is closely related. From the former it may be distinguished by the rarity of leaves from the flower buds, the blunter character of its leaf lobes, a difference difficult to describe but better understood by a comparison of figures or specimens; its larger flowers, with calyx lobes sparingly hairy and about 3 mm. long; petals slenderly fan-shaped and much broader than long; and

black instead of red fruit. *Prostratum* has leaf-bearing flower buds, leaves with sharply acute to acuminate, serrate-dentate lobes, flowers with calyx lobes smooth, about 2 mm. in length, and obovate-oblong in outline, petals with rhombic blade on a rather broad stalk, the whole much longer than broad, and fruit red. From *laxiflorum* our new species may be distinguished by the lack of bloom on the fruit, by its usually blunter leaf-lobes and teeth, the scattered glanduliferous hairs on the calyx lobes, and the petals nearly twice as broad as high. *Laxiflorum* has its fruit black with a bloom, leaf lobes usually acute, no glandular hairs on the calyx lobes, and petals commonly a little longer and a little narrower than those of *coloradense*, therefore only slightly broader than long.

The specimens of *coloradense* consulted are as follows:

Colorado:

"Rocky Mountains," *George Vasey*, 1868.

Mosquito pass, near Leadville, alt. 10,000 to 11,000 feet, *John Wolf*, 1873.

Marshall Pass, alt. about 10,000 feet, *C. L. Shear*, 1896 (No. 1156).

"Southwestern Colorado," [La Plata Mountains ?] Slide Rock Canyon, alt. 10,500 feet, *Baker*, *Earle*, and *Tracy*, 1898 (No. 289).

San Miguel County, near Telluride, on the headwaters of San Miguel River, alt. 10,000 feet, *Frank Tweedy*, 1894 (No. 190).

These three species, *prostratum*, *laxiflorum*, and *coloradense*, are very closely related and form a group which might be called, after the practice of the zoologists, a superspecies, or after the practice of some European botanists, a *species collectiva*. They differ in minor but well-defined characters, apparently do not intergrade, and each has a characteristic range distinct from that of the other two. *Prostratum* centers in eastern Canada, extending across the Great Lake and St. Lawrence region into the United States, continuing southward in the Appalachian district to North Carolina and westward in British America to Manitoba, Saskatchewan, Athabasca, and Mackenzie, and speci-

mens have been collected at Quesnelle in British Columbia. *Laxiflorum* is a characteristic species of the coast region of Alaska, reaching northward into the Yukon Valley and southward along the coast to Washington and Oregon, extending inland to the Selkirk Mountains of British Columbia and the Cascade Mountains of Washington. Westward *laxiflorum* occurs on the Alaska peninsula, in some of the Aleutian Islands, and in eastern Asia. *Coloradense* is known only from high elevations in the Rocky Mountains of Colorado, and is thus separated by several hundred miles from the known range of either of the others. *Laxiflorum* and *prostratum* apparently meet in British Columbia. All three species appear to belong to the Canadian zone, with a tendency to overrun into the Hudsonian.

VOL. XIV, PP. 7-22 APRIL 2, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

FIFTH LIST OF ADDITIONS TO THE FLORA OF WASHINGTON, D. C.

BY THEO. HOLM.

Five years have elapsed since the publication of my fourth list of additions to the local flora,* and it will be seen from the present paper that these five years of research have materially added to the number of species hitherto known to occur in the vicinity of Washington, in addition to which I have been able to record an extended range of many of the rarer species, formerly known from only a very few localities.

Through Dr. E. L. Greene's painstaking studies of various genera, more particularly of *Antennaria*, *Viola*, *Gerardia*, etc., these genera now appear to contain a number of excellent species, which formerly had been entirely overlooked or more or less confused; some of these species have even proved to be very common within the District of Columbia. In order to facilitate the use of this additional list, I have, with only a very few exceptions, followed the nomenclature and arrangement of the orders as in the previously published additions, these having been arranged in conformity with the fundamental work on the Flora, Lester F. Ward's "Guide to the Flora of Washington and Vicinity."†

*Proc. Biol. Soc. Wash. X, pp. 29-43, 1896.

†Bull. 22, U. S. Nat. Mus. 1881.

The discovery of species new to a local flora is always a great encouragement to the explorer, but it is nevertheless just as important to discover a well known but rare species in new localities; the rediscovery of an apparently lost or extinct species seems to us to be still more interesting and important, and we may cite among such instances the finding of *Aralia quinquefolia*, *Cicuta bulbifera*, *Phyllanthus* and *Cystopteris bulbifera*.

It is surprising to see how many rare species may be found in old, well known localities, when these are visited regularly every month. Frequent excursions to Great Falls, Marshall Hall, Snrattsville, etc., have brought forth a number of rare plants, hitherto overlooked, and even the old and well explored region around the Reform School seems to furnish an almost incessant increase of new or rare plants. On the other hand some of the older and most interesting localities are rapidly undergoing destruction, as for instance the famous Terra Cotta swamp, which at present is almost entirely changed to a miserable "corn field," and many of the species which were reported from that region are no longer to be found there. So much the more does it seem necessary to keep permanent track of the representatives of our local flora before the immediate vicinity becomes altogether transformed to building-lots and gardens.

In the present list some very interesting contributions have been kindly furnished by Dr. E. L. Greene, Messrs. Thos. H. Kearney, Jr., Wm. R. Maxon, G. W. Oliver, and Wm. Palmer, whose names appear in connection with their respective discoveries; where no collector is named, the species has been found by the writer himself, and the plants are all deposited in his private herbarium. The species marked with an asterisk are new to the local flora.

1. Clematis Virginiana L.
Four Mile Run; marshes near Kenilworth.

12. Ranunculus ambigens Wats.
Muddy creek-bottom near Marshall Hall. E. L. Greene.

13. Ranunculus pusillus Poir.
In a pool among the rocks near Sandy Landing.

15. Ranunculus abortivus L., var. **micranthus** Nutt.
Not uncommon in the woods between Sandy Landing and Great Falls.

20*b*. **Ranunculus septentrionalis** Poir.
High Island. E. L. Greene; swamps near Marshall Hall.

33. **Caulophyllum thalictroides** Michx.
Ravine near mouth of Scott's Run, Va.

34. **Jeffersonia diphylla** Pers.
Ravine near mouth of Scott's Run, Va.

40. **Papaver dubium** L.
Meadow near mouth of Scott's Run, Va.

47. **Nasturtium sylvestre** R. Br.
Wet places among rocks at Great Falls; on the river-shore at the mouth of Scott's Run, Va.; High Island; ditches near Alexandria.

49*a*. **Nasturtium palustre** D. C. var **hispidum** Fisch. & Mey.
Ditch near Marshall Hall.

61. **Cardamine hirsuta** L. (*C. intermedia* Horn.)
Swamps near Terra Cotta.

62*a*. **Cardamine parviflora** L.
Abundant in the woods near Soldiers' Home; Sandy Landing; Great Falls and several other places; evidently not uncommon in the District.

62*b*. **Cardamine silvatica** Link.
Ditch near Soldiers' Home.

62*c*. **Cardamine Pennsylvanica** Muhl.
Common in swamps at Great Falls; in a creek at Forest Glen.

63. **Dentaria heterophylla** Nutt.
Common in the woods from Sandy Landing to Great Falls.

*64*a*. **Dentaria diphylla** L.
Rocks at Glen Echo Junction. In flower first week of April.

*68*a*. **Sisymbrium altissimum** L.
Near Eckington, along Florida Avenue. E. L. Greene.

71. **Erysimum cheiranthoides** L,
River-shore near mouth of Scott's Run.

72. **Camelina sativa** Crantz.
Not uncommon in Brookland, along the railroad track and in vacant lots.

78. **Thlaspi arvense** L.
Along the road near Great Falls' Hotel; a few specimens on a lawn in Brookland.

86. **Viola villosa** Walt.
Very abundant in the woods at Forest Glen; not uncommon in sandy or gravelly soil near Terra Cotta, Soldiers' Home and Brookland.

86*a*. **Viola affinis** Le Conte.
Very common in shaded woods and swamps, for instance near Eckington, the Reform School, Riggs' Mill, Marshall Hall, etc.

86*b*. **Viola papilionacea** Pursh.
Common in deciduous forests.

*87*a*. **Viola emarginata** Le Conte.
Not rare in sandy soil, open woods or hill-sides, for instance near Eckington, Terra Cotta, Riggs' Mill, Sligo, etc.

87*b*. **Viola ovata** Nutt.
Very common in sandy soil, for instance near Soldiers' Home, Hyattsville, Sandy Landing, etc.

90. **Viola striata** Ait.
Sandy Landing.

100. **Polygala ambigua** Nutt.
In sandy soil near Riggs' Mill; dry fields near Marshall Hall.

100*a*. **Polygala verticillata** L.
Abundant near the Reform School; dry fields near Marshall Hall.

*100*b*. **Polygala Nuttallii** T. & G.
In thickets of *Azalea* and *Andromeda* near Terra Cotta; in flower second week of June.

106. **Silene nivea** D. C.
Along West Branch near Hyattsville; woods near Surattsville.

*115*a*. **Stellaria neglecta** Whe.
In the woods near Chain Bridge, Va.

*118*a*. **Arenaria Michauxii** Hook.
Rocks at Great Falls. G. H. Hicks.

124. **Paronychia dichotoma** Nutt.
On rocks at Great Falls, Md.

*129*a*. **Hypericum densiflorum** Pursh.
Swamps in woods near Surattsville.

138*a*. **Sida Napæa** Cavan.
At the south end of Long Bridge, quite common.

145. **Linum striatum** Walt.
Meadow near Sligo.

192. **Melilotus officinalis** Willd.
New York avenue near the railroad station; Navy Yard.

195*a*. **Trifolium hybridum** Savi.
Found in many places, especially in the northeastern section.

*199*a*. **Trifolium minus** Sm. (*T. filiforme* D. C. non L.)
On grassy slopes at Marshall Hall.

216. **Desmodium ciliare** D. C.
Common near Hyattsville; Sligo.

217. **Desmodium Marylandicum** Boott.
Near Highland; along the roads near Great Falls, on the Maryland side.

220*a*. **Lespedeza striata** L.
Common near Great Falls, Md.; near Cabin John Bridge; along Bunker Hill road near Catholic University.

221. **Lespedeza Stuvei** Nutt.
Low meadow-land near Hyattsville; near Soldiers' Home.

225. Vicia tetrasperma Loisel.
Meadow near Terra Cotta.

230. Clitoria Mariana L.
Sligo avenue and Rappley road near Takoma.

234*a*. Phaseolus diversifolius Pers.
Along Sargent road near Terra Cotta.

234. Phaseolus perennis Walt.
River-shore at Marshall Hall.

257. Rubus cuneifolius Pursh.
Fort Totten. E. L. Greene.

***264*a*. Potentilla reptans** L.
Near Brightwood. E. L. Greene.

267. Alchemilla arvensis Scop.
Along the road between Chain bridge and High Island.

270. Poterium Canadense B. & H.
Swamp near Hyattsville.

285. Cratægus parvifolia Ait.
Sandy Landing.

291. Chrysosplenium Americanum Schwein.
Forest Glen; at a spring in the woods near Great Falls, Md.

304*a*. Callitriche Austini Engelm.
Woods near Soldiers' Home.

306*a*. Rhexia Mariana L.
Not uncommon in swamps between Hyattsville and Highland, near the Reform School; woods at Marshall Hall.

307*a*. Ammannia humilis Michx.
Old river bottom near Hyattsville: swamps near the tow-path at Great Falls; common in wet places in the woods at Marshall Hall.

316*a*. Œnothera pumila L.
Dry fields near Highland.

317. Œnothera sinuata L.
Abundant in a low meadow near the Reform School.

327. Hydrocotyle ranunculoides L.
Swamp near Marshall Hall.

332. Erigenia bulbosa Nutt.
River shore at Great Falls, Md.

333*a*. Cicuta bulbifera L.
In the canal at Great Falls.

338*a*. Scandix pecten-veneris L.
Seabrook, Md. Walter H. Evans.

349. Aralia spinosa L.
Along the Walker road between Camp Spring P. O. and Surattsville.

351. Aralia nudicaulis L.
Woods near Surattsville.

351*a*. **Aralia quinquefolia** Decne. & Planch.
Several fruiting specimens were found in a ravine near the mouth of Scott's Run, Va., first week of July, 1898.

*356*a*. **Cornus circinata** l'Her.
Dodge's Mill. Conant, 1883. Reported by Dr. Walter H. Evans.

385. **Fedia Fagopyrum** Torr. & Gr.
Low thickets at Sandy Landing.

386. **Fedia radiata** Michx.
Low thickets at Marshall Hall.

387. **Dipsacus sylvestris** Mill.
Great Falls, Md.

391*a*. **Eupatorium altissimum** L.
Terra Cotta swamp.

*391*b*. **Eupatorium linearifolium** Michx.
Woods near Marshall Hall. E. L. Greene.

399. **Eupatorium ageratoides** L.
A form with cordate leaves and very large, open inflorescence occurs in the woods near Seven Locks and High Island.

402. **Mikania scandens** L.
Along a creek near Highland; near Arlington; near Seven Locks.

414*a*. **Solidago racemosa** Greene.
On the rocks at Great Falls, Md.

426. **Sericocarpus solidagineus** Nees.
Fort Totten; along Bates' road.

450. **Diplopappus umbellatus** Torr. & Gr.
Terra Cotta swamp; near Riggs' Mill.

457*a*. **Pluchea camphorata** D. C.
Still to be found at Marshall Hall, in open places in the woods.

458. **Filago Germanica** L.
Pastures near Marshall Hall.

459*b*. **Antennaria neglecta** Greene.
Very common in moist meadow lands, and has been collected in numerous places between Marshall Hall and Great Falls.

*459*c*. **Antennaria alsinoides** Greene.
Rather rare. Sand hills near Terra Cotta. E. L. Greene. Bunker Hill; Forest Glen; Great Falls, Md.; Marshall Hall. Only the pistillate plant is known of this species.

459*d*. **Antennaria decipiens** Greene.
Common in pine woods and *Andropogon* fields. Collected in many places between Washington and Great Falls.

459*e*. **Antennaria fallax** Greene.

459*f*. **Antennaria arnoglossa** Greene.
These two species grow mostly together in dry woodlands, and pistillate plants have been found in many places between Washington and

Great Falls. The staminate plants appear to be rare, those of *A. fallax* being recorded only from Brookland, Terra Cotta and Forest Glen, while the male plant of *A. arnoglossa* has been found on Bunker Hill and at Sandy Landing.

461. Gnaphalium uliginosum L.

Old river bottom near Hyattsville; wet places in the woods at Marshall Hall.

473. Eclipta procumbens Michx.

Common along the canal at Great Falls; swamp near Marshall Hall; on the Potomac shore near Aqueduct bridge, Virginia side; Brookland.

475. Rudbeckia triloba L.

On the river shore at Seven locks; woods near Great Falls, Md.; Chevy Chase.

479. Helianthus angustifolius L.

Swamp between Nork and Fort Myer.

492. Coreopsis tripteris L.

Rocks at Great Falls, Md.; woods at Seven locks.

***462*a*. Coreopsis bidentoides** Nutt.

In the canal near Sandy Landing.

494*a*. Bidens connata Muhl.

Old river bottom near Hyattsville; not uncommon in swamps around Eckington and Brookland with the var. *comosa* Gr.

***494*b*. Bidens vulgata** Greene.

Near Terra Cotta. E. L. Greene. Several places in Brookland and near Eckington.

***496*b*. Bidens lugens** Greene.

River bottom near Marshall Hall; abundant in swamps near Anacostia. E. L. Greene.

497*a*. Galinsoga parviflora Cavan.

Eckington near R street.

502*c*. Artemisia vulgaris L.

A single specimen was found in a dry field near Hyattsville.

503. Arnica nudicaulis Ell.

Woods between Eckington and Michigan avenue. E. L. Greene. Forest Glen.

***526*a*. Taraxacum corniculatum** Kit. (*T. erythrospermum* Andrz.).

In sandy or gravelly soil, not uncommon in woods near Soldiers' Home; it occurs also in lawns, Brookland and Catholic University.

***536*a*. Sonchus arvensis** L.

Lawns at Catholic University.

***536*b*. Leontodon autumnalis** L.

With the preceding.

551. Gaultheria procumbens L.

Wooded hill-sides at Sligo avenue and Rappley road near Takoma.

558. **Rhododendron viscosum** Torr., var. **glaucum** Gr.

559. **Rhododendron vicosum** Torr. var. **nitidum** Gr.
Abundant in the woods near Forestville and Surattsville.

565. **Pyrola chlorantha** Sw.
Pine woods near mouth of Scott's Run, Va.: ravines at Sligo avenue.

570. **Dodecatheon Meadia** L.
Glen Echo junction.

572. **Steironema lanceolatum** Gr.
Ditch near Marshall Hall.

576. **Lysimachia stricta** Ait.
Meadow near Hyattsville.

577. **Lysimachia nummularia** L.
Along Harewood avenue near Soldiers' Home.

577*a*. **Centunculus minimus** L.
Old river bottom near Hyattsville, in fruit last week of June.

578. **Anagallis arvensis** L.
Pastures near Marshall Hall; lawns at Catholic University.

585*b*. **Apocynum medium** Greene.
River shore at Marshall Hall. E. L. Greene.

589. **Asclepias rubra** L.
Deanwood swamp. Thos. H. Kearney, Jr.

596. **Asclepias quadrifolia** Jacq.
Near Fort Totten. E. L. Greene.

*601*b*. **Polypremum procumbens** L.
A single specimen was found on the road-side in the woods near Marshall Hall. E. L. Greene. In fruit second week of August.

606. **Bartonia tenella** Muhl.
Deanwood swamp. Thos. H. Kearney, Jr.

614*a*. **Hydrophyllum Canadense** L.
Ravine near mouth of Scott's run, Va.; damp, shaded places among rocks near Sandy Landing.

615. **Ellisia Nyctelea** L.
Abundant along the tow-path near Great Falls.

634. **Ipomæa lacunosa** L.
Arlington estate; on rocks at Great Falls, Md.

636. **Convolvulus sepium** L. var. **Americanus** Sims.
Low grounds on Bunker-hill road.

637. **Convolvulus arvensis** L.
Vacant lots on First street near N. Y. avenue; Navy Yard.

646. **Lycium vulgare** Dun.
Along the road near Henson's Creek.

653. **Linaria Elatine** Mill.
Grassy slopes at Marshall Hall; along Brentwood road near Brookland.

654. Scrophularia nodosa L.
Along the tow-path near Great Falls; ditch near Hyattsville; Marshall Hall.

663. Ilysanthes gratioloides Benth.
Not common; old river bottom near Hyattsville; swamp near Henson's Creek.

***663*a*. Ilysanthes attenuata** (Muhl.) Small.
Common along creeks.

667. Veronica scutellata L.
Muddy creek bottom near Marshall Hall.

669*a*. Veronica agrestis L.
Lawns of the Catholic University.

***699*b*. Veronica Chamædrys** L.
Near Soldiers' Home.

672. Buchnera Americana L.
Club-house woods near Great Falls, Md.

***677*a*. Gerardia decemloba** Greene.
Low grounds in Brookland near Bunker Hill; swamp near the Reform School; in bloom second week of September.

***677*b*. Gerardia Holmiana** Greene.
Wooded banks along Michigan avenue, opposite Soldiers' Home grounds; Brookland; Terra Cotta; in bloom second week of October.

***680. Melampyrum latifolium** Muhl.
In sandy soil in woods near Riggs' Mill.

680. Melampyrum Americanum Michx.
Ravines near Sligo avenue and Rappley road near Takoma.

***686*a*. Utricularia subulata** L.
Swamps in the woods near Surattsville. G. W. Oliver. In flower first week of September.

712. Pycnanthemum lanceolatum Pursh.
Terra Cotta.

***723*a*. Monarda clinopodia** L.
Ravine near mouth of Scott's Run, Va. In flower first week of July.

732*a*. Scutellaria parvula Michx.
Woods at northeast corner of Soldier's Home grounds; near Marshall Hall.

738*a*. Lamium purpureum L.
Capitol grounds. E. L. Greene.

745. Plantago Patagonica Jacq. var. **aristata** Gray.
Common near Hyattsville and many other places in the District.

***748*a*. Amaranthus chlorostachys** Willd.
Near the Navy Yard, with flowers second week of July.

749. Amaranthus albus L.
Along the railroad track near University Station; gardens in Brookland.

768. Polygonum hydropiperoides Michx.
Old creek-bottom near Marshall Hall.

***778*a*. Polygonum cristatum** Engelm.
Rocks near Great Falls, Md.; thickets near Hyattsville; common near Seven Locks. With flower and fruit third week of September.

788. Aristolochia Serpentaria L.
Abundant in ravines near Marshall Hall; ravines at Sligo avenue and Rappley road near Takoma.

796*a*. Euphorbia hirsuta Wieg.
Rocks at Great Falls, Md.; woods near Marshall Hall.

800. Euphorbia commutata Eng.
Common in rocky woods from Sandy Landing to Great Falls.

801. Phyllanthus Carolinensis Walt.
Old river bottom near Hyattsville; not uncommon in the woods at Great Falls, Md.; woods near Marshall Hall.

812. Urtica dioica L.
Not common. Along the tow-path near Great Falls.

830. Corylus Americana Walt.
Abundant near Sligo; South Brookland near the railroad track.

849. Quercus heterophylla Michx.
Several trees, but all sterile, were found in the woods at Marshall Hall.

901. Habenaria tridentata Hook.
Woods near Great Falls, Md.; very abundant in swamps near Suratts-ville.

903. Habenaria ciliaris R. Br.
Swamp near Bladensburg turnpike, south of the Reform School. G. W. Oliver.

904. Habenaria lacera R. Br.
Swamp near the Reform School; several places in Brookland; Terra Cotta swamp; swamps near Marshall Hall.

909. Spiranthes gracilis Big.
Woods along Scott's Run, Va.

910. Spiranthes simplex Gr.
Woods near Great Falls, Md.; Terra Cotta; Brookland.

912. Pogonia verticillata Nutt.
Swamp near Bladensburg. Thos. H. Kearney, Jr. Abundant on the sand hills around Fort Totten; damp woods near the Reform School; swamps near Surrattsville.

913. Calopogon pulchellus R. Br.
Deanwood swamp. Thos. H. Kearney, Jr. Swamp near Surattsville.

915. Microstylis ophioglossoides Nutt.
Woods near Marshall Hall; woods near Great Falls, Md.

925. Aletris farinosa L.
Fort Totten. E. L. Greene. Very common in the open woods south of the Reform School.

939. Allium tricoccum Ait.
Rocks at Great Falls, Md.

947. Majanthemum Canadense Desf.
Near the Reform School. G. W. Oliver. Abundant in the woods at Surattsville.

957. Veratrum viride Ait.
Woods near Surattsville.

962. Muscari botryoides Mill.
Rocks at Sandy Landing.

970. Juncus bufonius L.
Apparently not rare and found in several places; near Kenilworth; Bladensburg; Highland; Riggs' Mill; Takoma; Brookland; Marshall Hall.

982. Commelina hirtella Vahl.
River shore at Marshall Hall; Four Mile Run.

982*a*. Commelina Virginica L.
Rocks at Great Falls, Md.

985. Xyris flexuosa Muhl.
Swamp south of the Reform School; the Lydecker basin.

986. Eriocaulon decangulare L.
Swamps near Surattsville.

986*c*. Cyperus flavescens L.
Evidently common and found in many places, for instance: Terra Cotta swamp; along creeks on Bunker Hill road; at a spring on Arlington estate; abundant in swamp between Nork and Fort Myer; near Alexandria.

987. Cyperus diandrus Torr.
The specimens recorded in Professor Ward's List do not belong to this species, but to *C. rivularis* Kunth.

***987*a*. Cyperus rivularis** Kth. var. **eluta** Clarke.
With the type and equally common.

990. Cyperus erythrorhizos Muhl.
At a spring on Arlington estate; swamp near Marshall Hall.

991. Cyperus calcaratus Nees.
Swamps near the canal at Great Falls.

999*a*. Kyllinga pumila Michx.
Several places near Marshall Hall, in the woods.

1000. Fuirena squarrosa Michx.
Abundant in the Lydecker basin.

1003*a*. Eleocharis olivacea Torr.
The Lydecker basin.

1004*a*. **Eleocharis intermedia** Schult.
Wet places along Rappley road near Takoma; exceedingly common in swamps near Marshall Hall.

1007. **Scirpus planifolius** Muhl.
Common on the sand hills around Fort Totten; Forest Glen.

1010. **Scirpus debilis** Pursh.
Along Bunker Hill road.

*1018*a*. **Fimbristylis laxa** Vahl.
Abundant in low meadow-land near Hyattsville. In flower second week of August.

1019. **Fimbristylis capillaris** Gr.
On dry rocks at Great Falls, Md.

1019*a*. **Rynchospora fusca** R. & S.
Swamp between Nork and Fort Myer.

*1020*a*. **Rynchospora gracilenta** Gr.
Swamps near Surattsville.

*1020*b*. **Rynchospora cymosa** Ell.
Swamps south of the Reform School.

1021*a*. **Rynchospora cephalantha** Gr.
Along Queen's Chapel road; Lydecker basin; Arlington estate; Terra Cotta swamp.

1021*b*. **Rynchospora macrostachya** Torr.
Swamp in the woods at Marshall Hall.

1024. **Scleria pauciflora** Muhl.
Swamp south of the Reform School.

1024*a*. **Scleria reticularis** Michx.
Deanwood swamp. Thos. H. Kearney, Jr. Swamp between Nork and Fort Myer; near Surattsville.

1026. **Carex Willdenovii** Schk.
Common in the woods at Marshall Hall; Sandy Landing; Great Falls, Md.

1027. **Carex Steudelii** Kth.
Sandy Landing; Great Falls, Md.

1035*a*. **Carex Muhlenbergii** Schk. var. **enervis** Boott.
In dry, sandy soil near Terra Cotta; dry fields at Marshall Hall.

*1038*a*. **Carex stellulata** L. var. **cephalantha** Bail.
Terra Cotta swamp.

1051. **Carex Shortiana** Dew.
Near the river shore at Marshall Hall.

1054. **Carex granularis** Muhl.
Not common. Along the canal at Great Falls.

1055. **Carex glaucodea** Port.
Near Hyattsville; Fort Totten; very common in the woods at Marshall Hall.

1058*a*. **Carex grisea** Wahlbg. var. **angustifolia** Boott.
The Zoological Park.

1064. **Carex Careyana** Torr.
High Island.

1065. **Carex laxiculmis** Schw. (*C. retrocurva* Dew.)
Woods near Great Falls, Md.

1068. **Carex laxiflora** Lam. var. **styloflexa** Boott.
Terra Cotta swamp.

*1072*c*. **Carex laxiflora** Lam. var. **varians** Bail.
Bunker Hill; the Smithsonian Park; the Virginia shore near Aqueduct bridge.

1075. **Carex umbellata** Schk.
Exceedingly common on the sand hills around Terra Cotta and Fort Totten; Sandy Landing.

1077. **Carex nigro-marginata** Schw.
Grassy banks along Rappley road near Sligo; Bunker Hill; on rocks at Great Falls near the canal.

1081. **Carex prasina** Vahl.
Forest Glen.

*1092*a*. **Carex typhinoides** Schwein.
Low thickets near Hyattsville.

1101. **Vilfa aspera** Beauv.
Rocks at Great Falls, Md.

1101*a*. **Vilfa vaginaeflora** Vasey.
Common in the city, in lawns, vacant lots, etc.; along roads near Hyattsville, Highlands, Great Falls, etc.

1104*a*. **Agrostis elata** Trin.
Evidently common in woods, and has been found in many localities besides those already recorded: near Chevy Chase; Cabin John; Great Falls, Md., etc.

1112. **Muhlenbergia capillaris** Kth.
Very abundant forming large patches on the rocks at Great Falls, Md, October, 1899.

1119. **Aristida purpurascens** Poir.
On dry rocks at Great Falls, Md.; near Hyattsville.

*1124*a*. **Tricuspis seslerioides** Torr. var. **pallida** Holm, n. var.
A form with pale green spikelets; with the type near Marshall Hall.

1125*a*. **Eatonia obtusata** Gr.
Low grounds near the Reform School.

1126*a*. **Eatonia Dudleyi** Vasey.
In woods at Scott's run, Va.; Sandy Landing.

1129. **Glyceria laxa** Scribner.
Still abundant in the Terra Cotta swamp (Aug., 1900).

1130. Glyceria fluitans R. Br.
Ditch near Hyattsville.

***1130*a*. Glyceria obtusa** Trin.
Damp places in the woods near Surattsville.

1139. Eragrostis reptans Nees.
Along the tow-path at Great Falls; wet places along the roads in the woods at Marshall Hall.

1140. Eragrostis minor Host. (*E. poæoides* Beauv.)
Along the railroad track near University Station; along the tow-path at Seven locks.

1142. Eragrostis Frankii Mey.
Along the tow-path near Great Falls; in the woods near Marshall Hall; vacant lots in Brookland.

1143. Eragrostis Purshii Schrad.
Roadsides in Brookland; near Highland; Hyattsville; very common near Great Falls; near Cabin John Bridge.

1146. Festuca Myurus L.
Woods south of the Reform School; along the railroad track at Lamond station.

1156. Bromus sterilis L.
Brookland; New York avenue near Eckington.

1158. Uniola gracilis Michx.
Arlington estate; Takoma.

1166*a*. Danthonia sericea Nutt.
Many specimens were collected along the electric railroad track near Highland.

1169. Aira caryophyllea L.
Common along the road between Chain Bridge and Scott's Run, Va.; in dry fields near Surattsville; near the Reform School.

1178. Panicum agrostoides Spreng.
Swamp near Marshall Hall.

***1180*b*. Panicum Philadelphicum** Bernh. (*P. capillare* L. var. *flexile* Gatt.)
Along Rappley road near Glen Sligo. In flower first week of October.

1183*a*. Panicum commutatum Schult.
Soldiers' Home grounds; Forest Glen; High Island; Sandy Landing; Takoma.

1185. Panicum microcarpon Muhl.
Evidently common in open woods, and has been collected in several places between Washington and Great Falls on the Maryland side.

1187. Panicum laxiflorum Lam. (*P. pauciflorum* Ell. in Prof. Ward's list.)
The commonest species of Panicum in the woods at Great Falls, Md.

1187*a*. **Panicum sphærocarpon** Ell.
Woods near Riggs' Mill; Terra Cotta swamp; Chevy Chase; dry fields near Hyattsville and the Reform School.

1188*a*. **Panicum ramulosum** Michx.
Terra Cotta swamp.

1188*b*. **Panicum nitidum** Lam.
Old river bottom near Hyattsville; Terra Cotta swamp.

1188*c*. **Panicum lanuginosum** Ell.
Woods at Forest Glen; Fort Totten.

*1189*a*. **Panicum linearifolium** Scribn.
Plummer's Island. Thos. H. Kearney, Jr.

1192. **Panicum Crus-galli** L. var. **hispidum** Gr.
In the canal at Great Falls.

1196. **Cenchrus tribuloides** L.
Near Seven locks; along roads at Marshall Hall.

1203. **Andropogon macrourus** Michx.
Sphagnum swamps near Surattsville.

1220. **Woodwardia Virginica** Sm.
Common near Surattsville. Wm. R. Maxon.

*1222*a*. **Asplenium pinnatifidum** Nutt.
Two miles below Scott's Run on Virginia shore of Potomac. Wm. Palmer and Wm. R. Maxon.

*1222*b*. **Asplenium ebenoides** R. R. Scott.
Plummer's Island. Wm. Palmer. A single specimen.

1223. **Asplenium angustifolium** Michx.
Ravines between Marshall Hall and the Piscataway; western end of Massachusetts avenue bridge and Rock Creek. Wm. Palmer. Abundant along brooks in woodlands of the Potomac bluffs near Langley, Va. Wm. R. Maxon.

1226. **Camptosorus rhizophyllus** Link.
Plummer's Island. D. LeRoy Topping. Several situations on rocky cliffs of the Virginia shore of the Potomac opposite Langley. Wm. R. Maxon.

1230. **Aspidium cristatum** Swtz.
In the Lygodium swamp about two miles to the northwest of Riverdale, Md. Wm. Palmer and Wm. R. Maxon. Woods near Great Falls, Md.; near the spring-house, Takoma.

1236. **Cystopteris fragilis** Bernh.
Common in ravines north of Marshall Hall; Potomac Landing, Alexandria County, Va. Wm. Palmer. Near Sandy Landing.

*1236*a*. **Cystopteris bulbifera** (L.) Bernh.
On the Virginia shore of Potomac nearly opposite Langley, Va. Wm. Palmer and Wm. R. Maxon. Recorded in Flora Columbiana, Field and Forest. Vol. I, 1875, but with no locality.

*1237*a*. **Onoclea Struthiopteris** (L.) Hoffm.

Frequent along the alluvial portions of the Potomac on the Virginia side one to two miles above Cabin Johns. Several collectors.

1242. **Osmunda Claytoniana** L.

Between West Chevy Chase and Glen Echo Junction. Wm. R. Maxon.

1245. **Botrychium ternatum** Swtz. var. **dissectum** Milde.

Woods near Great Falls, Md.

1247. **Ophioglossum vulgatum** L.

Grassy roadside bank, Upper Marlboro, Md. Wm. R. Maxon. Woods at Marshall Hall; at the foot of Fort Totten.

1248. **Lycopodium lucidulum** Michx.

In dry woods near Cleveland Park. Wm. R. Maxon and C. L. Pollard. Ravines near Marshall Hall.

1249. **Lycopodium dendroideum** Michx.

Woods near Surattsville.

1253. **Selaginella apus** Spring.

Has been found in many places between Marshall Hall and Great Falls, Md., and is evidently not uncommon.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

GENERAL NOTES.

The subgenus Rhinosciurus of Trouessart.*

In the 'Catalogus Mammalium' (p. 410) Trouessart unites the *Sciurus laticaudatus* of Müller and Schlegel and the *S. davidianus* of A. Milne-Edwards to form the subgenus *Rhinosciurus*† placed at the end of the genus *Xerus*. Material in the United States National Museum shows that the two species are not congeneric, and that neither is closely related to *Xerus*. The genus *Rhinosciurus* (type *R. tupaioides* Blyth‡) is strikingly characterized by its greatly elongated, cylindric, *Tupaia*-like skull and small, slender incisors. The lower incisors are set more nearly in line with the mandibular ramus than in other squirrels, and the upper incisors are so small that in a skull 50 mm. in basal length they scarcely equal those in a skull of *Sciuropterus volans* only 27 mm. long. The '*Xerus*' *davidianus* on the other hand has a skull practically identical with that of the Chinese *Eutamias senescens*, though much larger. Indeed the agreement with *Eutamias* in both cranial and dental characters appears to be complete. Externally, however, the animal resembles *Sciurus* in its well-haired, bushy tail and in the absence of stripes on the body. It also diverges from *Eutamias* in the direction of *Sciurus* in the reduction of the capacity of the cheek pouches. As the animal can therefore be properly referred to none of the recognized groups it may be made the type of a new genus *Sciurotamias*.—*Gerrit S. Miller, Jr.*

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†First used by Gray in 1843 (List Mamm. Brit. Mus. p. 195) for a genus with *B. tupaioides* from Singapore as the type. Both generic and specific names are nomina nuda and must date from their earliest definition. The former was properly published by Gray in 1867 (Am. and Mag. Nat. Hist., 3d ser. XX, p. 286), the latter by Blyth in 1855 (Jour. Asiat. Soc. Bengal, XXIV, p. 477) as *Sc*[*iurus*] *tupaioides*, type locality Malacca.

‡The relationship of this animal to the Bornean *Rhinosciurus laticaudatus* given by Thomas (Proc. Zool. Soc. London, 1897, p. 933) as type of the subgenus is not fully understood.

On the name Vespertilio blossevillii.

In a recent note on the systematic name of the Cuban Red Bat, Dr. J. A. Allen falls into a very natural error in assuming that the "abstract" in Férussac's Bulletin, entitled "Mammifères nouveaux ou peu connus décrits et figurés dans l'Atlas zoologique du Voyage autour du monde de la corvette la Coquille," etc., was published after the appearance of the Zoology of the 'Coquille'. As a matter of fact, the Zoology of the voyage of the 'Coquille' appeared in livraisons, beginning with October, 1826; and tome I, pt. I, while dated "1826", was really published between 1826 and 1828, the preface actually bearing the date January, 1828. No descriptive matter appeared before 1827, but plates were issued with the separate parts, and the names on them will stand, except in those cases where an earlier description occurs in Férussac's Bulletin. In the case of *Vespertilio blossevillii*, the name dates from Férussac's Bulletin, VIII (not XIII, as misprinted in the note above mentioned), May, 1826, p. 95, while the earliest reference to *Vespertilio bonariensis* is plate II, fig. 1, Zool. "Coquille," which appeared in livr. 3 of that work, published in April, 1827. It will be plain, from the above, that *Lasiurus blossevillii*, and not *L. bonariensis* is the correct name of the Uruguayan species.—*Chas. W. Richmond.*

The name of the Aard-Vark.

In advocating the name *Orycteropus afra* (Pall.) for the Aard-Vark (Proc. Biol. Soc. Wash., XIII, p. 166) Mr. Rehn has omitted to notice (1) that *afra* is the feminine of a declinable adjective, and that the masculine, in agreement with *Orycteropus*, should be *afer*, and (2) that the combination *Orycteropus afer* has already been occasionally used in Zoology, e. g. P. Roy. Soc. XLVII, p. 246 (1890), and P. Z. S., 1897, p. 939. In neglect of the first point, *O. afra* has also been used by Flower and Lydekker (Mamm. p. 211, 1891).—*Oldfield Thomas.*

The name of the Ogotona.

Mr. Rehn has changed into *r*, Pallas' first *u* in *Lepus dauuricus*. As the name comes from the country of the Dauurien (as Pallas calls them) the letter is clearly not a *r* printed as a *u*, as is often the case in old works. In addition, the generic name having a feminine termination, the adjectival specific name should also be feminine. The proper name should therefore be, not Mr. Rehn's "*Ochotona davuricus*" but *Ochotona dauurica*.—*Oldfield Thomas.*

The name of the Viscacha.

In suggesting the name *Viscaccica* (Brandis, 1786, ex Molina) for "the Viscacha" Mr. Rehn has confused two perfectly different animals. Molina's "Viscaccia" is the Chilian *Lagidium*, while the Viscacha of modern writers is the Argentine *Lagostomus* (using for the moment the best known names for each). Furthermore, there is no need to drag in the translator Brandis, as in the 1782 edition of his Saggio, (p. 307) Molina himself properly describes and names "La Viscaccia, *Lepus Viscacia*" by which term he clearly means the *Lagidium* of Chili.

Lagidium viscacia Mol. is *probably* the proper name for the latter animal, but the question is so intricate, partly owing to the confused use of the two names Viscacha and Chinchilla for members of the three genera *Lagostomus*, *Lagidium* and *Chinchilla*, and partly in the doubt as to what animal the name *Callomys* Goff. will be applied to by eliminators and others, that I do not like to risk making confusion worse confounded by definitely asserting its validity.

The pertinence of the generic name "*Vizcacia*" to the Argentine Viscacha has been shown by Mr. Palmer (Science, N. S., VI, p. 21, 1897), though owing to the doubt* as to the date of its publication in Schinz's Naturgeschichte, the following reference may be taken as the first: *Viscaccia*, Schinz, Cuvier's Thierreich IV, p. 429 (1825). The difference in the spelling should be noted.

Curiously enough as a foretaste of the eternal Chili-Argentine confusion, Schinz heads the reference "Viscaccia Molina," but his enumeration of the digits, 4-3, and his measurements (taken from Azara) of *V. americana*" are clearly diagnostic of the Argentine animal.—*Oldfield Thomas.*

A correction of Vernonia gigantea pubescens.

Through a misapprehension of the case the subspecies *pubescens* was referred (Proc. Biol. Soc. Wash. **13**: 179, October, 1900) to *Vernonia gigantea* of the Atlantic seaboard, which does not occur in the Alleghenies or westward. The species so common throughout the latter range is *V. maxima* Small (Bull. Torr. Bot. Club, **27**: 280, May, 1900). Hence the name of the subspecies collected near Baileysville, West Virginia, is *Vernonia maxima pubescens.*—*E. L. Morris, Dept. Biol., Washington High Schools.*

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*Probably not published before 1825 or 1826 (Palmer).

Vol. XIV, pp. 27-28 April 2, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW SPINY RAT FROM LA GUAIRA, VENEZUELA.

BY OLDFIELD THOMAS.

A spiny rat collected at La Guaira, Venezuela, by Messrs. Wirt Robinson and M. W. Lyon, Jr. and submitted to me for determination proves to differ from the previously described species. It may be known as:

Proechimys guairæ, sp. n.

Allied to *P. trinitatis*, but less richly rufous in color.

Size rather less than in *P. trinitatis*. Spines evenly mixed with the dorsal hair, and of about the same prominence on the back; an average spine measures 23 mm. in length by about two-thirds of a millimeter in breadth. General color above much paler than in the allied species, more similar to that of the Ecuadorean *P. decumanus* Thos.; pale rufous heavily lined on the back with the black tips to the spines, laterally clearer but still rufous, the hairs indistinctly annulated with brown. Face greyer than back. Fine hairs of ear black, some longer black hairs at its base anteriorly. Under surface white, pure on the chest and belly, buffy on the throat and along a narrow indistinctly defined line edging the color of the flanks. Upper surface of hands and feet white, indistinctly browner along the outer edge of the metapodials. Tail well haired, black above and white below.

Skull very like that of the smaller mainland form of *P. trinitatis* (*P. urichi* Allen), but more heavily built and without the peculiar slenderness of muzzle that characterizes that animal. Supraorbital ridges heav-

ily developed, but abruptly ceasing at the fronto-parietal suture, the parietal itself being quite smooth. Pterygoid processes broadly spatulate. Palatal foramina large, the posterior ends continued backward as two gutters on to the front of the palate. Bullæ small, their antero-posterior length measured laterally into the angle formed by the paroccipital process, only 9.4 mm.

Dimensions of the type measured in the flesh:

Head and body, 240; tail, 190; hind foot, s. u. 45, c. u. 48.

Skull, greatest length, 56; basilar length, 39.2; zygomatic breadth, 27; nasals, length, 20.4; breadth of muzzle at fronto-premaxillary suture, 10; inteorbital breadth, 13.1; breadth on ridges above squamosals, 19.3; interparietal, 8.5 x 13.7; diastema, 12; palate from henselion, 19; palatel foramina, 7.5 x 3.7; length of upper tooth series, 8.7.

Hab. La Guaira, Venezuela.

Type. Male. U. S. N. M., No. 102,731. Original number 81. Collected 8th July, 1900 by Messrs. Lyon and Robinson. A paratype in British Museum, No. 1.1.5.3, presented by the United States National Museum.

This species is evidently closely allied to *P. trinitatis* and its continental representatives of *P. urichi* and *P. mincæ*. It differs from all three by its much paler color, and from the first and second by its nearly white feet.

From *P. centralis* and allies it is also separated by the absence of parietal ridges, in which respect it approaches the Peruvian *P. simonsi*.

The paratype is rather more brown and less rufous than the type, suggesting a specimen in a rather more youthful state of pelage.

VOL. XIV, PP. 29-32 APRIL 5, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

TWO NEW BIGHORNS AND A NEW ANTELOPE FROM MEXICO AND THE UNITED STATES.

BY C. HART MERRIAM.

In the course of field work in Mexico in 1899, Mr. E. W. Nelson, a field naturalist of the U. S. Biological Survey, and his able assistant Mr. E. A. Goldman, secured a series of eight Mountain Sheep or Bighorns in the barren desert mountains about Lake Santa Maria, Chihuahua. Comparison of these specimens with their nearest allies, *Ovis nelsoni* and *O. canadensis**, shows that they differ specifically from either. The new species may be known as follows:

*The type locality of the northern Bighorn, *Ovis canadensis* Shaw, is the Rocky Mountains of Alberta, Canada. The Biological Survey has secured topotype material from this region (collected by J. Alden Loring) which has been used in the comparisons on which the present paper is based.

Respecting the priority of the name *canadensis* Shaw (1803), over *cervina* Desmarest (1804), it may be stated that both Bolton (Cat. Sci. Periodicals, p. 624, 1885) and Sherborn (Ann. and Mag. Nat. Hist. 6th Ser. XV, pp. 375-376, 1895) after independent investigation agree that Shaw's name *canadensis* was published in 1803, while no one ever claimed that Desmarest's name *cervina* appeared before 1804. In the winter of 1890, when preparing my report on the Mammals of Idaho, and unaware of Bolton's determination of the date, I looked into the matter with some thoroughness and adopted the name *canadensis* as of unquestionable priority (N. Am. Fauna, No. 5, p. 81, 1891).

Ovis mexicanus sp. nov.

Type from Lake Santa Maria, Chihuahua. No. 99,342 ♂ ad. U. S. National Museum, Biological Survey Collection. Collected Sept. 16, 1899 by E. W. Nelson and E. A. Goldman. Orig. No. 13,974.

Characters.—Size large; color dark, much darker than *nelsoni* but less dark than *canadensis;* horns large; massive, dark, not strongly outcurved; hoofs and molars larger than in *O. canadensis;* ears long and large, nearly double the size of those of *canadensis*, measuring from occiput, in dry skin, 110-116 mm.; tail long and slender, measuring about 130 mm. Color pattern similar to that of *canadensis.*

Color.—Body color above and below drab brown, darkest on throat, legs, and tail; no trace of dorsal stripe; muzzle decidedly paler than rest of face; rump patch broader and more squarely truncate anteriorly than in *canadensis;* dark color on hind leg covering much more of inner side of thigh than in *canadensis;* but much less of lower leg, the white spreading broadly over the posterior and inner aspects, and on the inner side ending abruptly just above the calcaneal joint; whitish of chin broader and less sharply defined.

Cranial characters.—Skull as a whole large and massive. Compared with *canadensis*, orbits less prominent: frontals flatter (less 'dished' in forehead); basioccipital narrow, its sides nearly parallel, its muscular facets small and median sulcus broad; occiput (viewed from behind) much narrower; depth of face (above molars) less; permaxillæ longer, more slender, and reaching much farther back; jugal relatively small and less expanded anteriorly; lachrymal long, reaching well out toward premaxilla; paroccipital narrower and more slender; *lips of posterior nares* (behind hamulars) *thin* and somewhat everted [in *canadensis* thickened and *much swollen*]; angle of mandible obsolete; coronoid process lower and less expanded. Molar teeth larger. Horn cores longer, with longer curve and less flaring base.

Horns.—Large and heavy, but longer and less massive than those of *canadensis;* upper (flat) side narrower; base less flaring; orbital corner shortly rounded off (not produced).

Measurements.—Type specimen, ♂ ad.: Total length 1530; tail vertebræ 130; hind foot 425; height at shoulder 900. An ad. ♀ from type locality: total length 1490; tail vertebræ 130; hind foot 405; height at shoulder 880.

In examining a number of skulls of the Bighorn in the collection of the U. S. National Museum it is found that those from the Plains region of the western Dakotas and eastern Montana differ in important characters from those from the Rocky Mountains in Montana and Alberta. These differences appear to be constant and necessitate the recognition of the Plains animal as a subspecies of *Ovis canadensis.* The chief differences are the great size of the molar teeth and the massive-

ness and depth of the lower jaw. No skins have been examined. The new form may be known as follows:

Ovis canadensis auduboni subsp. nov.

Type from 'Upper Missouri'. No. $\frac{1520}{22610}$ ♂ yg.-ad. U. S. National Museum. Believed to have been collected in the Badlands of South Dakota in 1855 by Dr. F. V. Hayden, on the Warren Expedition.*

Characters.—Size large; skull and horns broad and massive; molar teeth much larger than in any known American sheep, the upper tooth-row in adult males measuring 96 mm. or more, and the 3 upper molars 63-65 mm. Underjaw (in type specimen) massive, heavy posteriorly, deeply bellied (depth under last molar 52 mm.); angle broadly rounded. In *canadensis* the jaw is light throughout and the angle, while small, is marked. Horns narrower and as a rule longer than in *canadensis*.

The animal is named in honor of Audubon, who in 1843 obtained from the Badlands specimens which he supposed the same as the Rocky Mountain species.†

In the desert region of northwestern Chihuahua, not far from Lake Santa Maria where the new *Ovis mexicanus* was obtained, Mr. Nelson and Mr. Goldman secured a series of eleven Prong-horn Antelopes. Comparison of these specimens with specimens from the northern Plains develops differences which seem to necessitate the separation of the southern from the northern animal. It may be known as follows:

Antilocapra americana mexicana subsp. nov.

Type from Sierra en Media, Chihuahua, Mexico. No. 98,742 ♂ yg. ad. U. S. National Museum, Biological Survey Coll. Collected October 4, 1899, by E. W. Nelson and E. A. Goldman. Orig. No. 13,989.

Characters.—Similar to *A. americana* but paler (in fresh fall pelage drab brown with a tinge of ecru, becoming cinnamon when the tips of the hairs wear off); mane absent or reduced to a narrow line of dark

*The U. S. National Museum register contains entries of several Mountain Sheep collected by Dr. F. V. Hayden on Lieut. G. K. Warren's Expedition to the Upper Missouri in 1855. In Lieut. Warren's report on his 'Explorations in the Dacota Country in the year 1855' (published in 1856), Dr. Hayden states that the bighorn was abundant in the region known as the badlands, and the narrative shows that the particular badlands meant are those between the Cheyenne and White Rivers in South Dakota.

†Quadrupeds of North America. Vol. II, pp. 163-172. 1851.

hairs on the nape; a median dorsal dark streak usually present on neck, sometimes reaching posteriorly to shoulders; head markings more sharply defined; occiput distinctly white or whitish, clearly defined posteriorly, and divided by a median dark stripe.

Cranial characters.—Skull similar to that of *americana* but orbits less abruptly protruding antero-inferiorly; premaxillæ more slender, especially posteriorly; bullæ thinner; lips of posterior nares longer (facial part of skull set farther forward).

Measurements.—Total length 1420; tail vertebræ 145; hind foot 410; height at shoulders 830.

VOL. XIV, PP. 33-34 APRIL 5, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW SQUIRREL FROM BORNEO.*

BY GERRIT S. MILLER, Jr.

The United States National Museum contains two specimens of the Bornean squirrel commonly referred to *Sciurus tenuis*, one taken by Mr. A. Everett, the other by Mr. Charles Hose. Externally they closely agree with true *Sciurus tenuis*, an animal which was originally described from material collected at Singapore. The skulls, however, are readily distinguishable from those of the Singapore squirrel, and show that the Bornean form, though closely related, is worthy of recognition by name. It may be called:

Sciurus parvus sp. nov.

Type.—Adult male (skin and skull) No. 84,509 United States National Museum. Collected at Nulu, Sarawak, Borneo (altitude 1000 feet) in October, 1894, by Charles Hose.

Characters.—Externally similar to *Sciurus tenuis* Horsfield, though underparts perhaps less tinged with buff; skull slightly larger than that of *S. tenuis*, the braincase disproportionally large and deep.

Color.—The color so closely resembles that of *Sciurus tenuis* that no detailed description is required. In the Bornean specimens the belly is less washed with buff than in the topotypes, but the difference may be seasonal, as the former were taken in summer and autumn, the latter in spring.

Skull and teeth.—Viewed from above the skull of *Sciurus parvus* differs from that of *S. tenuis* in its more inflated, globose braincase. The dif-

ference is particularly noticeable posteriorly. The greatest breadth of braincase in each of two Bornean specimens is 19 mm., while in three topotypes of *S. tenuis* it is only 17.6 mm. The interorbital breadth on the contrary is nearly the same in the two species, while there appears to be no difference whatever in the breadth of rostrum. Viewed from the side the peculiarities in the skull of the Bornean animal are even more apparent. The depth of braincase from middle of parietal to lower edge of audital bulla is fully 2 mm. greater than in *Sciurus tenuis* while the depth of rostrum is barely equal to that of the mainland animal. In *Sciurus parvus* the ratio of least rostral depth to the cranial depth just defined is about 41; in *S. tenuis* it is about 49. The ventral aspect of the skull shows no peculiarities.

Teeth as in *Sciurus tenuis*.

Measurements.—External measurements of type (a well made skin): total length, 285; head and body, 165; tail vertebræ, 125; pencil, 45; hind foot, 37.6 (35); ear from meatus, 13.8; ear from crown, 10.

Cranial measurements of type: greatest length, 39; basal length, 31.6; palatal length, 16.6; length of nasals, 11.4; greatest breadth of nasals, 5.4; interorbital breadth, 13.4; zygomatic breadth, 23.6; greatest breadth of braincase, 19.4; cranial depth from middle of interparietal to lower rim of audital bulla, 17; least depth of rostrum, 7; mandible, 21.6; maxillary toothrow (alveoli), 7; mandibular toothrow (alveoli), 7.2.

Specimens examined.—Two, the type and one from Spitang.

Remarks.—A series of Bornean specimens may show that *Sciurus parvus* differs from *S. tenuis* externally as well as in cranial characters. The Spitang skin is distinctly the more gray of the two, but as it was taken in July and the type specimen in October the difference is probably seasonal. In color it is approached by a specimen of *S. tenuis* taken at Singapore in May. Except in external appearance the Bornean animal in no way closely resembles the small *Sciurus procerus* of Bunguran Island, North Natunas.

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VOL. XIV, PP. 35-37 APRIL 25, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW DEER FROM COSTA RICA.*

BY GERRIT S. MILLER, JR.

In the original description of his *Cariacus clavatus*,† the *Odocoileus truei* of Merriam, from the Segovia River‡, eastern Honduras, Dr. F. W. True recorded seven Costa Rican deer in the National Museum collection, which though of unusually large size, he regarded as not separable from the Honduras animal. The differences between the deer of the two regions are so constant, however, that it now seems preferable to recognize the Costa Rican form as distinct. It may be known as:

Odocoileus costaricensis sp. nov.

Type.—Young adult male (skin and skull) No. $\frac{113885}{130339}$ United States National Museum.§ Collected in Talamanca, on the eastern side of Costa Rica, between the coast and the foot of the Cordilleras, by José C. Zeledon, during the latter part of 1872 or early in 1873.

Characters.—Considerably larger than *Odocoileus truei* Merriam, and general color lighter and more grizzled, particularly on sides of body. Skull and teeth uniformly larger and more robust than in the Honduras animal. Antlers heavier and more rugose.

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†Proc. U. S. Nat, Mus., XI, pp. 417-424. 1888.

‡Mr. Chas. H. Townsend who collected the original specimens informs me that they were taken in the open pine lands about 50 miles above the mouth of the river.

§Permanent dentition in place, but teeth practically unworn.

Color.—Dorsal surface a uniform, fine, but distinct grizzle of drab, black and buff, the individual hairs colored as follows: from base to slightly beyond middle drab, then after a rather abrupt transition, black to tip, the black area interrupted by a sharply defined band of light buff about 2 mm. in width. The buff is the predominating element of the grizzle except on crown, forehead, nape and middle of anterior portion of back, where black is in excess, without, however, forming any defined dark markings. Sides like back but the buff area on each hair is increased at the expense of the black. The resulting color is somewhat paler and coarser grizzle. Underparts mostly wood-brown, lighter on the neck, darker on the belly. Region between hind legs, and an ill-defined median line running forward to chest, dull white. The white reappears faintly on inner side of both front and hind legs, but is irregular and ill-defined, and scarcely extends downward to hock. Elsewhere the legs are wood-brown, faintly darker on outer side. Tail entirely white beneath, cinnamon above, dusky at tip. Ears grayish externally, whitish internally. Cheeks light wood-brown. Muzzle dusky. A faintly defined pallid area on throat between jaws. Hoofs black, edged with horn color.

A second specimen is in very bleached, abraded coat. General color light buff, but speckling of back and sides still evident notwithstanding the imperfect condition of the hairs. Front legs much paler than in the type, but color of hind legs not sensibly altered.

Skull.—Skull distinctly larger than that of *Odocoileus truei* but not otherwise tangibly different. In size and form it closely agrees with that of the externally quite dissimilar *Odocoileus thomasi* Merriam from Chiapas. The basal length in the type of the latter is 230 mm., in a second specimen 220. In *O. costaricensis* the basal length ranges from 235 to 250, and in *O. truei* from 200 to 220.*

Teeth.—The maxillary teeth are broader than in *Odocoileus truei*, though the toothrow is not increased in length. The increase in width is especially noticeable in the middle permanent premolar. Mandibular molars practically identical with those of the smaller animal, but premolars, particularly the first, much larger.

Antlers.—The antlers though similar in general form to those of the other members of the group are more robust and more coarsely rugose than in any of the allied species. A rudimentary prong is occasionally developed on inner face near middle. Beyond this region the surface of the anther is smooth.

Measurements.—External measurements of type (from well made skin): total length, 1400; tail vertebræ, 120; hind foot, 375; greatest diameter of hoof, 50; ear from crown, 110.

Cranial measurements of type: greatest length, 250 (264);† basal

*The skull of *Odocoileus nelsoni* Merriam, also from Chiapas, is probably of about the same size as that of *O. truei*. In the type (an immature male) the basal length of skull is 197.

†Measurements in parenthesis are those of the largest Costa Rican skull.

length, 237 (250); basilar length, 220 (235); median palatal length, 155 (165); palatal width between anterior molars, 38 (46); least interorbital width, 57 (64); greatest width between lower rims of orbits, 101 (112); zygomatic breadth, 94.6 (108); mastoid breadth, 74 (86); occipital depth, 58 (57); mandible, 190 (195); upper toothrow (alveoli), 68 (68);‡ lower toothrow (alveoli), 79 (82); length of the three lower premolars together (alveoli), 31 (33).

Specimens examined.—Two skins and four extra skulls, all from Costa Rica.

Remarks.—In addition to its larger size this species differs from *Odocoilcus truei* in the distinctly speckled back and sides. In the smaller animal the light subterminal bands on the back are broader and less strongly contrasted with the dark tips, while on the sides this element of the marking is so extended as to cover practically all of the visible part of the hair. As a result the sides are uniformly colored, without trace of grizzle. This condition is repeated in *Odocoilcus thomasi*, the only species equalling *O. costaricensis* in size.

‡Type of *O. truei:* upper toothrow (alveoli), 66; lower toothrow (alveoli), 73; length of the three lower premolars together (alveoli), 28. In the type of *O. thomasi* the corresponding measurements are 70, 80 and 32.

VOL. XIV, PP. 39-40 APRIL 25, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW DORMOUSE FROM ITALY.*

BY GERRIT S. MILLER, JR.

Among the mammals collected in Italy during the summer of 1900 by Mr. Dane Coolidge are five specimens of an *Eliomys* related to *E. quercinus* but differing from it in the color pattern of the tail and in the general coloration of the body. It is not closely allied to the Sicilian *Eliomys pallidus* Barrett-Hamilton, so far as can be determined from the description of the latter.

Eliomys cincticauda sp. nov.

Type.—Adult male (skin and skull) No. 103,030 United States National Museum. Collected at Sorrento, near Naples, Italy, May 31, 1900 by Dane Coolidge. Original number 1118.

Characters.—Size and general appearance as in *Eliomys quercinus*, but dorsal surface light wood-brown, and tail completely encircled by the black subterminal area. Line of demarkation on sides sharply defined and as conspicuous as in *E. quercinus*. Skull and teeth not peculiar.

Color.—Entire upperparts wood-brown (slightly paler than Ridgway's pl. III, fig. 19) brightest on head and on middle of back, inconspicuously sprinkled with blackish hairs, and lightened across shoulders and on sides by a suffusion of pale ecru-drab. The individual hairs are mostly slate-gray (Ridgway pl. II, fig. 5) through a little more than basal half, then pale ecru-drab for a varying distance, followed by wood-brown at tip. Among the hairs of this kind are scattered longer ones that appear to be blackish throughout. The varying width of the ecru-drab and

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wood-brown areas cause the slight differences in color of the back and sides. Color of sides continued down outer side of hind leg to heel and outer side of front leg nearly to wrist. Underparts whitish cream-color, the line of demarkation everywhere sharply defined and the contrasts conspicuous. Black face markings exactly as in *Eliomys quercinus*. Tail sharply bicolor from base to a little beyond middle, creamy white below, wood-brown mixed with white above. Slightly beyond middle there is a rather sudden change both above and below to black. This color continues uninterrupted for a distance of about 20 mm. on lower side and on upper side to base of terminal, nearly clear white pencil. The entire white area at tip of tail is about 10 mm. in length above and 30 mm. below. While the black of the upper surface extends further back than that below, the reverse is true of that of the under side of the tail. This shows a distinct tendency to run forward along the median line and divide the white area into two lateral stripes. Feet dull white. Ears thinly sprinkled with minute whitish hairs.

Skull and teeth.—I can find no tangible characters to distinguish the skull and teeth from those of *Eliomys quercinus*.

Measurements.—External measurements of type: total length, 249; head and body, 136; tail vertebræ, 108; hind foot, 29 (28). A second specimen (♂) from the type locality: total length, 254; head and body, 147; tail vertebræ, 107; hind foot, 30 (29). The hind foot in each of two other topotypes measures 30 (29). One of these specimens is a female.

Cranial measurements of type: greatest length, 34; basal length, 29; basilar length, 26.4; greatest length of nasals, 12.4; greatest width of both nasals together, 4.4; median palatal length, 12.8; greatest breadth of palate between toothrows, 4; diastema, 8; zygomatic breadth, 19; least interorbital breadth, 4.6; breadth of braincase above roots of zygomata, 14.8; mastoid breadth, 16.6; least depth of rostrum behind incisors, 6; distance from middle of parietal to lower edge of audital bulla, 13.2; mandible, 17; maxillary toothrow (alveoli), 5.4; mandibular toothrow (alveoli), 5.2. Another skull (male) is somewhat larger: greatest length, 36; basal length, 31; maxillary toothrow, 5.8.

Specimens examined.—Five, all from the type locality.

Remarks.—Aside from the different color pattern of the tail this animal differs from *Eliomys quercinus* in the strong wood-brown of the upper parts and the very distinct cream color of the ventral surface. In *E. quercinus* the underparts are clear white slightly tinged with blue, while the white of the tail is all pure. In the Italian animal the only marking that approaches pure white is the terminal area of the tail. From *Eliomys pallidus* this species differs in the brown (not "light powdery-looking gray") underparts, distinct black head markings, sharp line of demarkation along sides, and as the description contains no reference to the color pattern of tail, probably in this character as well.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

FIVE NEW SHREWS FROM EUROPE.*

BY GERRIT S. MILLER, JR.

Among the extensive series of European shrews collected for the United States National Museum during the past three years there are five forms that have not been hitherto described. Two of these were taken in Sicily by Mr. Dane Coolidge, two in the foothills of the Pyrenees by Mr. Robert T. Young, and one in Switzerland by Mr. J. Alden Loring.

Crocidura sicula sp. nov.

Type.—Adult male (skin and skull) No. 103,301 United States National Museum. Collected at Palermo, Sicily, June 20, 1900, by Dane Coolidge. Original No. 1332.

Characters.—Smaller than *Crocidura russula* from central Europe (total length about 105 instead of 120; hind foot, 13 instead of 15); color, both above and below, lighter than in the continental animal.

Color.—Dorsal surface drab (a trifle paler than Ridgway's pl. III, fig. 18) faintly clouded with broccoli-brown, many of the hairs showing silvery tips in certain lights. Underparts pale smoke-gray approaching white. Along sides the transition from drab to gray is much more abrupt than in *C. russula* in corresponding coat. Tail dull drab, faintly paler below. Feet an indefinite gray intermediate between color of tail and belly. The fur is everywhere gray (Ridgeway pl. II, fig. 7) at base.

Skull and teeth.—The skull and teeth are uniformly and noticeably

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smaller than in *Crocidura russula*, but otherwise they show no peculiarities.

Measurements.—External measurements of type: total length, 100; head and body, 68; tail, 32; hind foot, 13 (12). Measurements of an adult female from the type locality: total length, 110; head and body, 75; tail, 35; hind foot, 13 (12).

Cranial measurements of type: greatest length (exclusive of incisors), 17.6 (19);* greatest postorbital breadth, 8.8 (9.6); greatest antorbital breadth, 6.2 (6.8 : mandible, 9 (10); entire maxillary toothrow, 8.4 (9); entire mandibular toothrow, 8 (8.6).

Specimens examined.—Two, both from the type locality.

Remarks.—*Crocidura sicula* differs from *C. russula* in the characters that would be expected from the known peculiarities of other members of the Sicilian fauna.

Crocidura caudata sp. nov.

Type.—Young adult female (in alcohol) No. 103,302 United States National Museum. Collected at Palermo Sicily, June 21, 1900, by Dane Coolidge. Original number, 1365.

Characters.—Somewhat larger than *Crocidura sicula* (total length about 115, hind foot about 15) and differing from this as well as from other European species in the size and great length of the tail, which when laid forward over back reaches to middle of ear.

Tail.—The tail forms about 42 per cent of the total length and at middle is 3 mm. in diameter. Near base it is distinctly four-sided, but beyond middle becomes sub-cylindric. The tip is flattened laterally for about 13 mm. evidently as the result of an accident. Scales arranged in indistinct rings, of which there are about 7 to the millimeter at middle. The rings are partly obscured by fine short hairs; and the longer bristles with which the tail is sprinkled are more abundant than in *Crocidura russula* and *C. sicula*.

Color.—Color after six months immersion in alcohol essentially as in *Crocidura sicula* but fur both above and below with a dull slaty cast, and transition from drab of back to gray of underparts less abrupt.

Skull and teeth.—The skull is so injured that the details of its form cannot be seen, but apparently the rostrum is relatively shorter and the interorbital region broader than in either *Crocidura russula* or *C. sicula*. Teeth as in the related species except that the first upper unicuspid is larger and the second and third are so crowded that the third is tightly wedged into the concavity on the inner side of the large premolar. It is thus partly hidden by the small anterior cusp of the large tooth, while in the related species it is so far removed from the latter that a distinct break in the toothrow is usually seen when skull is viewed from the outer side. How far these characters may be constant cannot be

*Measurements in parenthesis are those of an adult male *Crocidura russula* from Waremme, Belgium.

determined from a single specimen: but I find no close approach to them among a considerable number of specimens of *Crocidura russula* from continental Europe.

Measurements.—External measurements of type: total length, 115; head and body, 63; tail, 52; hind foot, 15 (14).

Specimen examined.—One, the type.

Remarks.—Although represented by a single individual only this species appears to be remarkably well characterized.

Sorex araneus alticola subsp. nov.

Type.—Adult female (skin and skull) No. 85,930 United States National Museum. Collected near Meiringen, Switzerland (altitude 2100 m.), October 17, 1898, by J. Alden Loring. Original number 5781.

Characters.—Larger than true *Sorex araneus* and with relatively longer tail. Teeth more heavily pigmented than in the typical form.

Color.—Summer pelage (type specimen): fur short harsh and dull. Entire dorsal surface rather pale sepia. Sides broccoli-brown faintly tinged with drab. Underparts light gray strongly washed with Isabella color. Though there is no sharp line of demarkation between the color of back and sides, and only slightly more between that of latter and underparts, the transition is sufficiently abrupt to render the animal as a whole distinctly tricolored. Tail sharply bicolor, seal-brown above and at tip, broccoli-brown below. Feet glistening broccoli-brown. Winter pelage: fur long soft and lustrous. Elements of color essentially the same as in summer, but sepia of dorsal surface darkened until it approaches black, and gray of under parts scarcely tinged with Isabella color. Sides as in summer. The tricolored pattern is thus more noticeable than in the other pelage, particularly in the sharp contrast between back and sides.

Skull and teeth.—Though the skull and teeth agree with those of typical *Sorex araneus* in size and form, the teeth are readily distinguishable by their more extensive and darker pigmentation. The differences are most readily seen upon comparison of the small cusps on the lingual side of the upper molars and large premolar, that is, the protocone of the posterior molar and the hypocone of each of the other teeth. Seventy-five topotypes of *Sorex araneus araneus* and twenty-two specimens of *S. araneus alticola* from the neighborhood of the type locality give the following results:

	S. araneus.	*S. alticola.*
Large premolar with pigment on hypocone	0%	45.4%
First molar with pigment on hypocone	22.6%	90.9%
Second molar with pigment on hypocone	21.2%	90.9%
Third molar with pigment on hypocone	45.3%	100%
None of the small cusps pigmented	54.6%	0%
All of the small cusps pigmented	0%	45.4%

Measurements.—External measurements of type specimen: total length, 131; head and body, 76; tail vertebræ, 55; hind foot, 16 (14). Average and extremes of ten specimens from the type locality: total length, 123 (118-131); tail vertebræ, 52.5 (47-57); hind foot, 14.8 (14-16); hind foot without claws, 13.3 (13-14).

Specimens examined.—Seventy-five, from the following localities in Switzerland: Andermatt, 48; Brünig, 9; Meiringen, 18.

Remarks.—On comparing the series of Swiss shrews with a somewhat greater number of true *Sorex araneus* from Upsala, Sweden, taken by the same collector, the differences between the two races are so apparent as to call for no special comparisons beyond those already given.

Twenty shrews from eastern Norway collected by Miss Thora Stejneger, mostly in the vicinity of Bergen, represent a large animal quite distinct from the *Sorex araneus araneus* of southeastern Sweden, and much resembling *S. araneus alticola*. Ten specimens give the following averages: total length, 127 (116)*; tail vertebræ, 49 (39); hind foot, 16.2 (14); hind foot without claws, — (12.7). It will be seen that the Norwegian shrew exceeds both true *araneus* and *alticola* in length of hind foot, but that the tail, while longer than in the Swedish animal, is not quite equal to that of the Swiss form. Unfortunately the Norwegian specimens are all in the summer coat, and all are so old that the teeth are too much worn to show the pigmentation. The status of the animal therefore cannot be satisfactorily determined.

Sorex araneus euronotus subsp. nov.

Type.—Adult male (skin and skull) No. 101,321 United States National Museum. Collected at Montréjeau, Hautes Pyrenees, France (in foothills of Pyrenees), July 8, 1899, by Robert T. Young. Original number, 642.

Characters.—Size slightly less than that of true *Sorex araneus;* color (in summer pelage), more brown, particularly on underparts.

Color.—The colors are essentially as in the summer pelage of *Sorex araneus araneus* and *S. araneus alticola* except that the browns are darker and the belly is heavily washed with wood-brown. The tricolored pattern though visible is less distinct than in the other races.

Skull and teeth.—Skull as in *Sorex araneus araneus*, but slightly though constantly smaller, and with less inflated braincase. Teeth as in the typical form but smaller and somewhat more heavily pigmented.

Measurements.—External measurements of type: total length, 122; head and body, 78; tail vertebræ, 44; hind foot, 13.5 (12.5). Average and extremes of nine specimens from the type locality: total length, 114 (107-117); tail vertebræ, 42 (37-44); hind foot, 13.8 (13.5-15); hind foot without claws, 12.8 (12.5-14).

Specimens examined.—Nine, all from the type locality.

*Measurements in parenthesis are those of a corresponding number of *Sorex araneus* from Upsala, taken at random from the large number at hand.

Neomys fodiens minor subsp. nov.

Type.—Adult male (skin and skull) No. 101,311 United States National Museum. Collected at Montréjeau, Hautes Pyrenees, France (in foothills of Pyrenees) July 8, 1899, by Robert T. Young. Original number, 641.

Characters.—Smaller than *Crossopus fodiens* from Sweden, Germany, Switzerland, and Belgium, (tail 50-60 instead of 65-75, hind foot with claws, 17-19 instead of 19-22), but incisor teeth noticeably larger. Color not distinctive.

Skull and teeth.—While the skull is of about the same size as in true *Crosopus fodiens* the braincase is somewhat narrower, and the rostrum consequently appears more massive. Teeth similar to those of typical *C. fodiens* in form, but anterior incisors and first and second unicuspids distinctly larger.

Measurements.—External measurements of type: total length, 136; head and body, 82; tail vertebræ, 50; hind foot, 17 (16). Two other adult males from the type locality measure respectively: total length, 137 and 151; head and body, 82 and 85; tail vertebræ, 53 and 60; hind foot, 18.5 (17.5) and 19 (18).

Specimens examined.—Three, all from the type locality.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

SIXTH LIST OF ADDITIONS TO THE FLORA OF WASHINGTON, D. C. AND VICINITY.

BY EDWARD S. STEELE.

WITH DESCRIPTIONS OF NEW SPECIES AND VARIETIES BY EDWARD L. GREENE, ALVAH A. EATON, AND THE AUTHOR.

The following list is based upon a course of collecting prosecuted outside of my routine work for five years beginning with 1896. The general purpose has been merely to record names of new and less familiar plants, with stations; but advantage has been taken of the opportunity to publish a few descriptions of new local material and to record some observations.

Professor Greene has kindly furnished for publication here a name and character for a new violet which I was so fortunate as to discover. Mr. Alvah A. Eaton describes two new forms of Isoetes, which are not, however, my own discoveries. I propose a segregate from the *Lycopus virginicus* of authors, a well-marked species long since noticed, but apparently never properly named. In an extended note on *Vernonia glauca* I hope to have set that species in a somewhat clearer light. Other notes are scattered through the list.

I am indebted to several gentlemen for the revision of my determinations, particularly to Mr. L. H. Dewey, who studied all my earlier collections of grasses. The dichotomous Pani-

cums I have of late left wholly to the skill and kindness of Mr. E. D. Merrill, who is working with Professor Scribner in that trying field. Professor C. F. Wheeler has been referee for about all of the Carices that presented difficulties, and I am also the beneficiary of Mr. Geo. B. Sudworth, Mr. Frederick V. Coville, Mr. J. N. Rose, Mr. Charles L. Pollard, and others.

The arrangement of the list follows the sequence of Engler and Prantl, but the numbers prefixed are those of Professor Ward's Guide to the Flora of Washington and Vicinity (Bull. U. S. Nat. Mus. No. 22, 1881) and the subsequently published additions. In order to preserve the original numeration, and at the same time place the additions in their proper connections, the use of appended letters has been resorted to.

The prefixed asterisk denotes a species not hitherto recorded in print as belonging to our flora. In the case of a number of these species my collection has probably been anticipated by that of other collectors whose results have not been published, but it is not practicable wholly to avoid this injustice. On the other hand, some first collected by me have in the same manner been entered in an earlier list.

*1217*a*. **Pteris aquilina pseudocaudata** Clute. (*P. aquilina caudata* of American authors, not of Linnaeus).

Kenilworth, abundant near the railroad, September 20, 1900. Also near Hyattsville.

1233*a*. **Dryopteris spinulosa** (Retz) Kuntze.

In a ditch near Captain Jones' place beyond Chevy Chase Lake.

1234. **Dryopteris spinulosa intermedia** (Muhl.) Und.

Not seen near the city. Found at Suitland, near Kensington, and near Great Falls on the Virginia side.

1237*a*. **Onoclea struthiopteris** (L.) Hoffm.

A few sterile fronds, Plummer's Island, May 31, 1897.

1240. **Lygodium palmatum** (Bernh.) Sw.

In a drained swamp, eastern part of Suitland, Sept. 8, 1899.

*1213*a*. **Equisetum robustum** A. Br.

On both sides of Beaver Dam Branch, near the road. Rarely found in fruit.

*1253*c*. **Isoetes saccharata** Engelm.

In tide mud among coarse gravel along the bay at the mouth of Four Mile Run, August 5, 1898. The range as given in Britton and Brown's Flora is "Wicomico and Nanticoke rivers, eastern Maryland". The following varieties, though not of my own collecting, may be appropriately published in this place.

*1253*d*. **Isoetes saccharata Palmeri** A. A. Eaton, var. nov.

Aspect of *riparia*. Leaves much stouter than in the type, 1 to 1½ dm. long, recurved; macrospores 500 to 550*M*, with markings taller and more confluent, strongly suggesting *riparia*.

This variety might easily pass for *riparia*, which has, indeed, happened several times; but the very narrow, almost obsolescent velum, the less tuberculate microspores, the smaller, more closely sculptured macrospores, and the dirty brownish color when dry, sufficiently distinguish it. The spores appear intermediate between *riparia* and the varieties of *echinospora* in sculpture, some of the markings being irregular walls, others broad, often forked spinules as in *Braunii*.

First collected by Mr. T. C. Palmer, of Media, Pa., at Lloyd's Creek, Sassafras River, Maryland, August 12, 1895, and by him ably characterized*. Specimens collected by Mr. Frederick V. Coville at the foot of the Washington estate, Mount Vernon, Va., do not fully agree, but apparently connect the variety with the typical form of the species.

Types in the herbarium of A. A. Eaton, the National Herbarium, and those of the Missouri Botanical Garden, the University of Minnesota, and the Linnaean Fern Chapter.—*A. A. Eaton.*

1253*b*. **Isoetes saccharata reticulata** A. A. Eaton, var. nov.

Smaller; leaves 10 to 20, slender, erect, vivid green, 1.5 to 2 dm. long, with abundant stomata; macrospores 400 to 432*M*, marked with low, parallel, anastomosing walls above and more or less regularly reticulate below.

The aspect of this plant also suggests *riparia* rather than *saccharata*. The spores sometimes resemble those of small *Tuckermani* or even *Engelmanni*, but the walls are much lower, often mere threads. Occasionally a spore is found which bears parallel walls below as well as above.

Hunting Creek by the wagon bridge near its mouth, one mile below Alexandria, Va., July 22, 1888, Geo. Vasey and Frederick V. Coville; same station, September 22, 1900, Wm. R. Maxon, No. 365. Also tide beach, Anacostia river, Washington, D. C., September 1, 1900, E. S. Steele. Perhaps referred to by Palmer (l. c. p. 222). Type specimens are deposited in the herbaria mentioned in the description of the preceding variety.†—*A. A. Eaton.*

886. Potamogeton Nuttallii Cham. & Schlecht. (*P. Claytonii* of Ward's Catalogue.)

Common in the tributaries of the Eastern Branch.

*885*a*. **Potamogeton amplifolius** Tuckerm.

Mouth of Four Mile Run and Hunting Creek, also in Anacostia river, but flowers and fruit not seen.

*893*a*. **Echinodorus radicans** (Nutt.) Engelm.

Along a depression in the flats below Chain Bridge, perhaps a dozen

*Bot. Gaz. 4: 221. 1896.

†The Vasey and Coville specimen cited above is that determined by Theo. Holm in the third list of additions as *I. riparia* Engelm. It is hence given the same number, and the asterisk is omitted.—E. S. S.

specimens, some well developed, August 1, 1900. In Britton and Brown's Flora the northern limit of this species on the Atlantic coast is given as North Carolina.

*893. **Lophotocarpus calycinus** (Engelm.) J. G. Smith.

Eastern Branch below Navy Yard, growing in tide mud; also below Alexandria, September 4, 1899. Apparently scarce within our limits.

*894*a*. **Sagittaria Engelmanniana** J. G. Smith.

First collected, in sterile condition only, in a swampy pasture near Ardwick, Md., September 6, 1899. Two or three fruiting specimens were found on the water's edge at Great Falls, October 3, 1899. This extends the known range of the species, and proves that it is sometimes dioecious. Determination confirmed by Mr. J. G. Smith.

894*b*. **Sagittaria pubescens** Muhl.

Very common in swamps, springy places, and ditches, but in my experience not found in or close to open water. It reaches the edge of the river marsh, but I have not observed it far inside.

I have been somewhat inclined to regard this plant as specifically distinct from *S. latifolia*, and as Mr. J. G. Smith is willing to be quoted in support of this view, I feel warranted in restoring it. The leaves greatly resemble in form those of typical *latifolia*. They vary in length from 4 inches to a foot, including the lobes, and are rounded or obtusely angled at the apex, differing somewhat in the length of the lobes, which, however, are usually moderately shorter than the blade; but they do not run into the well known eccentricities of the *latifolia* forms. A very characteristic feature is found in the involucral bracts, which are at least as broad as long, of a yellowish white and translucent hue, and densely hirsute-pubescent.

*894*c*. **Sagittaria longirostra** (Micheli) J. G. Smith.

In moderate quantity in the marsh around the mouth of Oxen Run, opposite Alexandria, August 18, 1900,

*1203*a*. **Andropogon Elliottii** Chapm.

Brightwood Park Swamp, September 20, 1896; Connecticut Avenue Bridge, October 7, 1896.

*1204*a*. **Andropogon Halepensis** (L.) Brot.

Rather common around dumping grounds. The cultivated sorghum and broom corn also appear occasionally in these situations.

*1191*a*. **Panicum Walteri** Pursh.

Shore west of bathing beach, September 2, 1897.

1178. **Panicum agrostoides** Trin. (*P. agrostidiforme* of Britton and Brown.)

River swamp, Brick Haven, October 10, 1896; also South Washington and below Alexandria.

*1178*a*. **Panicum longifolium** Torr.

Kenilworth Swamp, August 28, 1897. Also swamp above Hyattsville.

1187*a*. **Panicum sphaerocarpon** Ell.

Flats near mouth of Oxen Run, July 1, 1899. Also Arlington.

1188*f*. **Panicum polyanthes** Schultes. (*P. microcarpon* of Ward's Catalogue.)

District Line, August 4, 1896. Also Four Mile Run.

1187. **Panicum Ravenelii** Scribn. & Merrill. (*P. paucifloroum* of Ward's Catalogue.)

Slope above Canal road, May 24, 1898, June 12, 1900.

*1188*e*. **Panicum Scribnerianum** Nash.

Kenilworth, June 9, 1899.

1188. **Panicum dichotomum** L.

Of the *dichotomum* group I have, as determined by Mr. E. D. Merrill, besides *dichotomum* itself: *Atlanticum* Nash, *barbulatum* Michx., *Clutei* Nash, *Columbianum* Scribner, *commutatum* of authors, not of Schultes, *implicatum* Scribner (doubtful species), *lanuginosum* Ell., *laxiflorum* Lam., *lucidum* Ashe, *uncinatum* Trin. The *lucidum* takes the place of *sphagnicolum* Nash as to this locality.

1192*a*. **Panicum miliaceum** L.

Waste ground, several places.

*1180*c*. **Panicum capillare Gattingeri** Nash.

Plummer's Island, August 24, 1897. Also Great Falls and Bethesda.

1180*b*. **Panicum flexile** (Gattinger) Scribn.

Near Glen Echo, September 11, 1896; Linnaean Hill Road, September 27, 1899.

*1180*d*. **Panicum minimum** Scribn. & Merrill. (*P. minus* of Britt. & Brown.)

South Arlington near Four Mile Run, August 27, 1899; also Bennings.

*1193*a*. **Chaetochloa imberbis perennis** (Hall) Scribn. & Merrill.

Kenilworth, first half of August, 1898, and in many places since; most abundant near Beaver Dam Branch; also at Jackson City, and near Brightwood swamp. It appears to be most at home in swamps and moist ground, but I have seen it in dry soil at West Eckington and even on a dry southern slope near the Massachusetts Avenue Bridge.

1193. **Chaetochloa verticillata** (L.) Scribn.

Occurs occasionally in waste ground, but appears never to multiply much.

1172*a*. **Phalaris arundinacea** L.

Wet field, Jackson City, west of road, June 14, 1896 and June 6, 1899.

1117. **Aristida gracilis** Ell.

Arlington, near the river, and also on the Rockville road. The form known as variety *depauperata* Gray was found at Bennings, September 18, 1897.

1108. **Muhlenbergia Mexicana** Trin.

A form with long culms and slender panicles, corresponding presumably to the variety *filiformis*, was collected along the Glen Echo railroad. The type has been found in several places.

1110. Muhlenbergia tenuiflora (Willd.) B. S. P.

Arlington near Four Mile Run, August 27, 1899; Hyattsville, September 26, 1900, the latter specimens over 4½ feet long.

***1111*a*. Muhlenbergia palustris** Scribn.

The peculiarities of this grass were noticed in my collection of 1896, but it was distributed as *M. diffusa* for lack of a better determination. The next year attention was again called to the differential characters, which resulted in its description as a new species. Outwardly it is distinguished by its habit, which is even more slender than that of *M. diffusa*, and by its pink purple instead of dark purple hue. More closely examined, the development of the lower glume will be noticed as the distinctive feature. The type locality is Brightwood Park swamp, which forms the head of Piney Branch. It still exists here, but is suffering much from the spirit of improvement. The only other station known is the wet meadow south of Beaver Dam Branch, west of the Anacostia road.

1101*a*. Sporobolus vaginaeflorus (Torr.) Wood.

This species is now understood by the agrostologists of the Department of Agriculture as including *S. neglectus* Nash. A tuft with culms 2½ feet long was found on the Rockville road.

***1102*a*. Agrostis intermedia** Scribn.

Arlington, August 11, 1896; Chautauqua, August 17, 1896; also on the river near Cabin John, and on the wooded flats at Hyattsville.

1114*a*. Calamagrostis Canadensis (Michx.) Beauv.

Bladensburg, in swamp west of the railroad, found overripe in 1898, and in good condition June 17, 1899. Also seen in a swamp north of Beaver Dam Branch, west of Anacostia road.

1169*a*. Arrhenatherum elatius (L.) Beauv.

Now abundant near Kalorama, beyond Eckington, etc. I would call attention to the fact that our plant has not only the long awn on the lower flowering scale, but also an awn in a slit at the summit of the upper flowering scale. The cleft sometimes descends one-third the length of the scale, but is generally more shallow. The awn, which is upwardly barbellate, generally overtops the scale, but is sometimes about equal to it or even shorter.

***1123*a*. Spartina cynosuroides** (L.) Willd.

One small patch at Jackson City, east of the railroad. Seen in larger quantity on the river flats at Harper's Ferry.

***1123*a*. Leptochloa fascicularis** (Lam.) A. Gray.

Sewer, lower part of Duke street, Alexandria, September 4, 1899.

1140. Eragrostis Eragrostis (L.) Karst.

Parking southwest of Treasury Building, September 28, 1899; also in 1900.

***1143*a*. Eragrostis pilosa** (L.) Beauv.

Jackson City, August 3, 1896; also near Eastern Branch and Upper Paint Branch.

*1137*a*. **Poa flava** L.

Near railroad north of North Brookland, July 22, 1896; not since seen.

1129. **Panicularia Canadensis** (Michx.) Kuntze. (*Glyceria*, of Ward's Catalogue.)

Terra Cotta Swamp, collected in overripe condition in 1896 or 1897; in good condition June 23, 1899. Seen also in a swamp south of Four Mile Run.

1128*a*. **Panicularia pallida** (Torr.) Kuntze.

Bladensburg, a short distance beyond the spring, June 17, 1899.

1130. **Panicularia fluitans** (L.) Kuntze.

Feeder Dam, May 28, 1897. Seen also at Bladensburg, not far from the spring.

*1151*c*. **Bromus purgans incanus** Shear.

Plummer's Island, August 24, 1897; also Four Mile Run and near canal below Cabin John. This grass blooms two months later than *B. ciliatus*. Only a few of the upper leaves remain green at flowering time, commonly overtopping the surrounding vegetation.

*1151*a*. **Bromus unioloides** (Willd.) H. B. K.

Dumping grounds, May 28, 1898 and June 12, 1899.

*1151*b*. **Bromus inermis** Leyss.

Dumping grounds, June 14, 1899; June 8, 1901.

*1151*d*. **Bromus maximus** Desf.

Dumping ground, June 5, 1901.

*1156*a*. **Hordeum pusillum** Nutt.

South Washington, 1896; Canal road, May 24, 1898.

*1156*b*. **Hordeum murinum** L.

Dumping grounds, May 28, 1898.

989. **Cyperus microdontus** Torr.

Bladensburg, September 7, 1896. Anacostia road above Kenilworth, October 1, 1899, September 20, 1900. Seen also on the railroad a mile above Anacostia. Grows always in wet sand, and sometimes fruits at the height of an inch or two. This is doubtless the *C. Nuttallii* of Ward's Flora, as that species can scarcely occur here.

990*a*. **Cyperus inflexus** Muhl.

Margin of water, Jackson City, August 1, 1899; Chain Bridge, Virginia side, August 17, 1900. Has the fragrance when dried of slippery elm.

*991*a*. **Cyperus fuscus viridescens** Hoffm.

Sewer at the foot of Duke street, Alexandria, September 4, 1899.

*991*b*. **Cyperus rotundus** L.

A small patch on the waste ground west of the old fish pond, October 13, 1899.

993. **Cyperus strigosus** L.

Besides the type the varieties *compositus* and *robustior* seem to be distinguishable here, the former, however, not very common.

*997*a*. **Cyperus cylindricus** (Ell.) Britton.

Near Kenilworth Swamp, September 18, 1897; Bennings, on the flats, July 15, 1899.

1003*a*. **Eleocharis olivacea** Torr.

One mile north of Berwyn, May 6, 1900.

*1006*a*. **Eleocharis tuberculosa** (Michx.) Roem. & Schult.

Brightwood Swamp, July 24, 1897; Howard Hill Reservoir, very abundant, July 2, 1898.

*1003*b*. **Eleocharis capitata** (L.) R. Br.

Howard Hill Reservoir, August 26, 1896; July 22, 1898.

1002. **Eleocharis obtusa** Schultes.

A clump of this species (following Mr. Fernald's revision) with culms over a foot-and-a-half tall was found in water at Four Mile Run.

*1002*b*. **Eleocharis obtusa jejuna** Fernald.

Near Kenilworth.

1002*a*. **Eleocharis Engelmanni** Steud.

Damp path near Silver Hill, August 18, 1897; flats near Pennsylvania Avenue Bridge, June 29, 1897; also in the Howard Hill Reservoir.

*1003*a*. **Eleocharis palustris** R. Br. (Not of Ward's catalogue.)

Swampy margin of river, opposite Alexandria, July 1, 1899. Not seen elsewhere.

1003. **Eleocharis glaucescens** (Willd.) Schult.

River swamp, Aqueduct Bridge, etc. Common. This is doubtless the *E. palustris* of Ward's catalogue.

1019. **Stenophyllus capillaris** (L.) Britton.

Specimens from low ground at Bennings had innumerable culms, many of them fifteen inches long.

1010. **Scirpus debilis** Pursh.

Bladensburg, near Terra Cotta; Chautauqua, across the canal; South Arlington.

1012. **Scirpus sylvaticus** L.

Lakeland at outlet of Lake, July 11, 1900.

1000*a*. **Hemicarpha micrantha** (Vahl) Britton.

Chain Bridge, Virginia side, August 19, 1900, a few specimens. Not seen elsewhere.

1021*b*. **Rynchospora corniculata macrostachya** (Lam.) A. Gray.

Eastern Branch swamp, on both sides.

1020. **Rynchospora alba** (L.) Vahl.

Brightwood swamp, in small quantity; Paint Branch swamps, abundant.

1020*a*. **Rynchospora gracilenta** A. Gray.

Swamp one mile north of Berwyn, July 28, 1900.

1020*b*. **Rynchospora cymosa** Ell.

Kenilworth swamp, June 20, 1898, a small amount. Swamp west of Anacostia road north of Beaver Dam Branch, August 5, 1898; Lakeland

near creek, July 8, 1900.

1022. Scleria triglomerata Michx.

Terra Cotta swamp, June 29, 1896. Seen since in Kenilworth swamp, on Fairfax road south of Four Mile Run, and at Lakeland.

***1024*b*. Scleria reticularis pubescens** Britton.

Paint Branch swamps and north of Kenilworth. Other material from the Brightwood swamp (August 16 and September 22, 1897) with thicker culms and broader leaves may be *S. Torreyana* Walp. Thus far I find it very difficult to separate these species.

1024. Scleria pauciflora Muhl.

Addison Heights, Chevy Chase, Glen Echo Heights, Anacostia road north of Kenilworth, Takoma Park, and Lakeland.

1090. Carex lupulina Muhl.

I have a form from the woods bordering the river marsh at Bennings determined by Professor Wheeler as "the variety near var. *pedunculata* Dewey". The peduncle of the sterile head is over 3 inches long.

1094. Carex bullata Schk.

Formerly in the Brightwood Park swamp; common in the swamps around Hyattsville.

***1088*a*. Carex lurida exundans** Bailey.

Very common. A form from the Potomac flats has some of the staminate heads fertile at the summit.

1087. Carex hystricina Muhl.

Canal at District line, May 28, 1897. Not common.

1085. Carex comosa Boott.

I failed to distinguish this from *C. pseudo-cyperus* until last season, but specimens from the Potomac flats seem decisive.

1092*a*. Carex typhinoides Schwein.

Lakeland, between the electric and steam railroad tracks, August 4, 1900.

1084. Carex riparia Curtis.

Seen by me only in the river marsh east of the Alexander Island race course.

1051. Carex Shortiana Dewey.

A few specimens in the Feeder Dam region, 1896. Abundant on the Potomac flats west of the Fish ponds, 1900.

***1051*a*. Carex lanuginosa** Michx.

Feeder Dam, May 21, 1898; river swamp, Alexander's Island, May 12, 1900.

***1048*a*. Carex stricta angustata** (Boott) Bailey.

Margin of bay, foot of seventeenth street, May 18, 1898; also north of Berwyn. This is not to be confounded with the *C. angustata* of Ward's catalogue, which is doubtless the typical *C. stricta*.

***1051*b*. Carex fusca** All.

Bog one mile north of Berwyn, May 6 and July 28, 1900.

*1061*a*. **Carex costellata** Britton.

Ravine, District line, May 15, 1899; Cleveland Park region and Massachusetts avenue extended.

1062. **Carex triceps** Michx.

Besides the type, which is common, I have a form with the awns of the scales much longer than the perigynia, probably *C. hirsuta cuspidata* Dewey; the difference is very considerable. Eastern Branch region, June, 1896; District line, May 28, 1897.

*1062*a*. **Carex Caroliniana** Schwein.

Feeder Dam, May 28, 1897; Conduit road near Cropley, May 30, 1899.

1039. **Carex gracillima** Schwein.

Glencarlyn, in overripe condition, June 6, 1898; Rock Creek above Military road, May 9, 1899; also on Cabin John Run.

1058*a*. **Carex amphibola** Steud.

More common in my experience than *C. grisea* Wahl.

1056. **Carex pallescens** L.

Woods beyond St. Elizabeth's; scarce.

1067. **Carex laxiflora** Lam.

In my judgment the forms still covered by this name include from two to five good species. It is quite impossible to regard *blanda* and *patulifolia* as varieties of the same species. The soft deep green or yellowish-green foliage of the former is wholly distinct from the firm glaucous or grayish-green blades of the latter, the basal portion of which survives the winter as in *C. platyphylla*, a habit shown in a far less degree by *blanda*. *C. patulifolia* further differs in its more numerous and densely tufted culms, its linear spikes, and its habitat, keeping as it does to the upland while *blanda* descends to moist flats. If this separation were made, the variety *divaricata* would go with *patulifolia*, provided it is not itself distinct. It differs from the latter in its larger and more stipitate fruit, its narrower leaves, the smaller number of culms, and the spreading habit, the culms standing at angles of about 45 degrees, while those of *patulifolia* are erect. The range of *divaricata* requires further observation. It is fond of wooded hillsides, the sides of ravines, etc. I have collected or observed it near Eastern Branch, east of Soldiers' Home, in Rock Creek Park, in the Cleveland Park region, and beyond Glen Sligo. I have the typical *laxiflora*, so determined by Professor Wheeler, (although the fertile spikes are dense and not at all like the figure in Britton and Brown) from near Chevy Chase and from the District line toward Cabin John.

1064. **Carex Careyana** Torr.

Scarce, but found on High Island and in the woods at Seven Locks.

1078. **Carex Pennsylvanica** Lam.

Specimens from the south slope of the ridge at Four Mile Run were said by Professor Wheeler to be the first true *Pennsylvanica* he had seen from Washington.

1077. Carex nigromarginata Schwein.

Ravine, Linnaean Hill road.

1030*a*. Carex conjuncta Boott.

Potomac flats, spring of 1900 and 1901.

***1030*c*. Carex gravida** Bailey.

Monument ground in grass, May 23, 1898; also May, 1901, doubtless introduced. Professor Wheeler observes: "While your plant is not quite so robust as this species from Illinois and Iowa, I cannot put it anywhere else."

***1030*d*. Carex xanthocarpa** Bicknell.

Near Fourteenth street extended, May 28, 1900; South Arlington, May 30, 1900; beyond Eckington, June 10, 1900. Seldom very yellow in color. Grows both in wet and in comparatively dry ground, but more vigorously in the former. Its discovery here extends the known range. Professor Wheeler thinks our plant may be var. *annectens* Bicknell.

***1040*b*. Carex setacea** Dewey.

Slope above Canal road, June 15, 1900; so determined by Professor Wheeler. An extension of the known range.

1037*a*. Carex retroflexa Muhl.

Seven Locks, May 9, 1898, very young. Also, Little Falls on the Virginia side, in the woods above Georgetown, and on Linnaean Hill road.

1034. Carex Leavenworthii Dewey. (*C. cephalophora angustifolia* of Ward's Flora).

Specimens thus named by Professor Wheeler were collected near Kalorama Heights, May 26, 1899. He notes that the perigynia surely indicate this species, although the specimens are taller than usual and have not the bracts which are commonly, though not always present. The bracts are present in specimens retained by me. Since communicating with Professor Wheeler I have re-collected this plant (Mount Vernon, May 30, 1901; original locality, June 8), and have also collected the species, of normal size, in the grass near the Monument, where it is well established, having doubtless been introduced in grass seed. I can find no material difference between the forms except in the length of the culms, which in our possibly native plant is often 2, sometimes even 3, feet, but in the Monument ground plant does not exceed 16 inches. The narrow leaves and smaller heads set the species apart from our very abundant *cephalophora*.

1035*b*. Carex Atlantica Bailey.

Common in boggy places. This is probably the *C. stellulata* of Ward's Flora.

***1035*c*. Carex interior** Bailey.

Wet ground, Glen Echo Heights, May 16, 1897; Feeder Dam, May 21, 1898; Mount Vernon, May 30, 1901.

***1035*d*. Carex interior capillacea** Bailey.

Bog east of Anacostia road south of Beaver Dam Branch, June 3, 1900. An extension of the known range.

*1035*c*. **Carex canescens** L.

Swamp, Hyattsville east of creek, May 17, 1898.

1028. **Carex bromoides** Schk.

Known to me only from the wet woods opposite the race course on Alexander's Island, which is probably exactly Dr. Vasey's station. May 12, 1900.

*1040*c*. **Carex tribuloides moniliformis** (Tuckerm.) Britton.

Potomac Flats west of railroad, June 3, 1900.

1045*a*. **Carex festucacea** Willd.

One clump, Massachusetts avenue extended, May 26, 1899; also a clump near railroad north of Kenilworth June 3, 1900; in the latter specimen the culms are taller and somewhat nodding. Determined by Professor Wheeler.

1045*b*. **Carex alata** Torr.

Swampy flat at Jackson City, east of road, June 18, 1896 and June 14, 1897; Mount Vernon, 1901.

1045*c* **Carex albolutescens** Schwein.

Kenilworth swamp, June 20, 1898, overripe; also above Hyattsville, in swamp west of creek.

875. **Peltandra Virginica** (L.) Kunth.

In specimens from the Potomac flats and from above Aqueduct Bridge the seeds, as first noticed by Mrs. Steele, are nearly black when ripe, not green, as stated in the descriptions.

*879*a*. **Lemna perpusilla** Torr.

Abundant in still water near canal at Widewater, October 3, 1899, and at Chautauqua.

*879*b*. **Lemna minor** L.

What I take to be this species occurs in the old fish pond together with Spirodela.

986. **Eriocaulon decangulare** With.

Formerly very abundant at Brightwood swamp. Found also at Takoma Park and in one or more of the Paint Branch swamps.

986*a*. **Eriocaulon septangulare** With.

Abundant on the tide beach at Four Mile Run, July 31, 1896.

976. **Juncus Torreyi** Coville. (*J. nodosus* var. *megacephalus* of Ward's Catalogue.)

Jackson City and Howard Hill reservoir.

*978*a*. **Juncus Canadensis brevicaudatus** Engelm.

Boggy ground at Bennings, September 7, 1899. Determined by Mr. Coville.

960. **Tofieldia racemosa** (Walt.) B. S. P.

One of the Paint Branch swamps, September, 1899, 1900.

958. **Stenanthium robustum** S. Wats.

Abundant in the Hyattsville swamp west of the creek: collected in fruit August 25, 1900.

956. Melanthium Virginicum L.

Formerly in Terra Cotta Swamp; now abundant in the swamps south of Arlington; also north of Berwyn.

956. Veratrum viride Ait.

Magnolia Run, and in a swampy pasture on the Columbia Pike, south part of Arlington.

947. Unifolium Canadense (Desf.) Greene.

Seen abundantly along the banks of a stream in Snitland in 1899 and 1900.

944. Polygonatum commutatum (R. & S.) Dietr. (*P. giganteum* of Ward's Catalogue.)

Even small plants growing on uplands seem to belong to this species rather than to *P. biflorum*.

934. Smilax glauca Walt.

In a note under this species Britton and Brown refer to "a form with numerous small prickles on the lower part of the stem, and more elongated, sometimes halberd-shaped leaves", named *S. spinulosa* by J. E. Smith. I was hereby reminded of a plant I had found at Bennings, and by further observations I learned that the young stems of *S. glauca* frequently have the leaves narrowed, commonly to a lanceolate and long-acuminate form, and that, with or without the peculiar leaves, such stems are apt to be prickly.

***924*a*. Narcissus biflorus** Curtis.

Near Kalorama Heights, May 14, 1899. This is a genuine escape, as a good many plants were found scattered about a grassy field.

928. Iris cristata Ait.

Seven Locks and Little Falls on the Virginia side.

***928*a*. Iris Pseudacorus** L.

Has spread from the old fish pond into a tributary ditch.

931*a*. Sisyrinchium Atlanticum Bicknell.

Takoma Park, May 27, 1900; Kenilworth swamp, June 3, 1900.

931. Sisyrinchium angustifolium Mill.

A remarkable display of this plant was seen on a hill on the Conduit road in 1900. Some of the clumps, which were very numerous, must have contained 200 or more culms. The spathes were deep purple.

901. Habenaria clavellata (Michx.) Spreng.

A good many specimens were found in a moist place part way up the ascent at Arlington August 11, 1896. Since found in small quantity near the Reform School, at Magnolia Run, and in the woods adjoining the river marsh, Bennings.

902. Habenaria flava (L.) A. Gray.

Woods on river marsh, Bennings; a good supply.

903. Habenaria ciliaris (L.) R. Br.

Before its discovery in Kenilworth swamp I was told by a resident of Takoma Park that this plant grew near the railroad station there, in the spot where I later found it.

904. Habenaria lacera (Michx.) R. Br.

One or two specimens on high ground, Cabin John. A larger amount in Kenilworth swamp and in the swamp north of Beaver Dam branch. Also a specimen at Magnolia Run.

***904*a*. Habenaria peramoena** A. Gray.

A single specimen at Feeder Dam.

910. Gyrostachys simplex (A. Gray) Kuntze.

Connecticut Avenue Bridge, August 26, 1897; Ardwick, September 6, 1897.

915. Achroanthes unifolia (Michx.) Raf.

Glen Echo Heights (Mrs. Steele), September 13, 1899, in fruit.

917. Leptorchis Loeselii (L.) MacM.

Fruiting specimens were found in the Howard Hill reservoir, July 2, 1898, and on the Leesburg pike toward Great Falls, September 18, 1899.

867. Populus grandidentata Michx.

Terra Cotta and Lakeland.

868. Populus deltoides Marsh.

None of the specimens I have met with are clearly native. A male and female, perhaps forty feet high, stand on the flats at the iron bridge over Rock Creek near Massachusetts avenue extended, and other examples occur on the Potomac flats.

866. Salix purpurea L.

One tree was found on the Potomac flats east of railroad, April 20, 1900.

833. Quercus macrocarpa Michx.

The only tree I have seen stands in the woods on the bluff above the canal, at the District line.

838. Quercus prinoides Willd.

Specimens about two feet high, in flower, Bladensburg, May 17, 1898; also banks of Rock Creek above Military road and on the adjacent ridge, the last much larger.

806. Celtis occidentalis L.

The only specimen known to me stands by the road half a mile above Cabin John.

806*a*. Celtis pumila Pursh.

The restoration of this species by Mr. E. J. Hill (Bull. Torr. Club, **27**: 496) is welcome. Common in the up-river region; seen also at Marshall Hall and on the Giesboro Road. Mainly on the flats but sometimes on the bluffs.

***811*a*. Morus alba tatarica** Sieb. & Zucc.

A tree thus determined by Mr. Sudworth stands in the waste ground below the old observatory, and the same variety occurs along the Canal road. It fruits freely.

807. Humulus lupulus L.

Field near Tenleytown Junction; roadside south end of Chain Bridge;

Captain Jones' place near Chevy Chase Lake. Also on a brook above the Dalecarlia reservoir remote from dwellings.

*807*a*. **Humulus Japonicus** Sieb.

Waste ground, September 30, 1899, pistillate flowers.

816. **Parietaria Pennsylvanica** Muhl.

High Island and slope above Canal road.

*787*a*. **Asarum reflexum ambiguum** Bicknell.

Moist woods, different places near District line on Cabin John R. R., May 28, 1901.

781. **Rumex verticillatus** L.

Flats above Aqueduct Bridge, Virginia side, June 2, 1896.

*780. **Rumex Patientia** L.

Dump ground, June 5, 1901.

778. **Polygonum scandens** L.

While some of our specimens have the calyx wings somewhat indented, the great mass of our material certainly belongs to this species. I note in some specimens fruits that are almost wingless mixed with the others. I have one collection which may prove to be *P. cristatum*.

752*a*. **Chenopodium album viride** (L.) Moq.†

Not uncommon in waste grounds.

753. **Chenopodium Boscianum** Moq.

Woods, Brick Haven, Va., September 3, 1897; first noticed here by Mr. L. H. Dewey.

755. **Chenopodium murale** L.

Found several times in waste places around the city, also at First lock. Rather common at Harper's Ferry.

*758*a*. **Chenopodium rubrum** L.

Potomac flats, October 9, 1897; abundant.

758. **Chenopodium anthelminticum** L.

I have found only a single specimen belonging to this species. Mr. Dewey also found one on the experiment grounds of the Department of Agriculture. The absence of bracts from most of the racemes, as well as the greater length of the latter, are essential characters.

*749*a*. **Amaranthus blitoides** S. Wats.

Waste grounds, river front near Fourteenth street, September 20, 1897.

749. **Amaranthus graecizans** L. (*A. albus* of Ward's Flora.)

Waste places in and around the city. Seen abundantly in a garden in Suitland.

*751*a*. **Acnida tamariscina** (Nutt.) Wood.

I collected in 1897 or 1898 one or two specimens of this species on the Potomac flats dumping ground.

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†*Chenopodium botrys* L. was collected at Harper's Ferry in September, 1900, but I have not yet found it within our limits.

*125*a*. **Portulaca grandiflora** Hook.
Waste ground, September 19, 1900.

106. **Silene alba** Muhl. (*S. nivea* of Ward's Catalogue).
Feeder Dam, Plummer's Island, Rock Creek flats near Captain Jones' place.

*109*a*. **Silene antirrhina divaricata** Robinson.
Kensington, July 4, 1899; overripe at this date. Probably same, High Island and First lock. Perhaps a good species.

120. **Sagina decumbens** (Ell.) Torr. & Gray.
Congress Heights, May 16, 1898.

121. **Tissa rubra** (L.) Britton.
Crevices in sidewalk, head of Fourth street; road west of Georgetown.

124*a*. **Scleranthus annuus** L.
Street north of old observatory, May 1, 1898.

*38*a*. **Cabomba Caroliniana** A. Gray, var.
Leaves of this plant were collected by Mr. Dewey and myself in Beaver Dam Branch near its entrance to Eastern Branch in September, 1897, but its identity was not then made out. I collected the plant in flower September 1, 1900, in the river a little below the Navy Yard Bridge. As Cabomba is known to have been planted in the Eastern Branch for use in aquaria, it has doubtless spread from that source, and it may now be considered as established. There is a specimen in the National Herbarium from one of the fish ponds, collected by Dr. Vasey, which is said to be introduced from the Patapsco River.

Our plant has the decided peculiarity that all of the floating leaves except the two lowermost, and sometimes these also, are lobed at the base, giving the leaf a sagittate form. In the ordinary descriptions these leaves are said to be entire, but Gray in the Illustrated Genera says "or emarginate". The cleft in our plant perhaps never reaches down to the petiole, but it is usually far deeper than would be indicated by the term emarginate. The specimen from the Patapsco River seems to have the same peculiarity. Some of the material planted in the Eastern Branch is said to have been brought with goldfish from Japan, but this is probably a mistake, as there is no species of Cabomba reported from that country. This is presumably a form or variety of *C. Caroliniana*, but it would be interesting to know where it is native.

24. **Delphinium tricorne** Michx.
A single plant on the mainland near Plummer's Island, Maryland side, May 13, 1900.

26. **Aconitum uncinatum** L.
Near Tenleytown Junction, on Glen Echo Heights, and near Linnaean Hill road.

*9*a*. **Anemone Canadensis** L.
Woods below Congress Heights, May 25, 1898, in a moderate patch.

1. Clematis ochroleuca Ait.

On the ridge at Four Mile Run; hill near St. Asaphs; Arlington near Nancks, and woods west of Georgetown (one plant).

13. Ranunculus pusillus Poir.

Border of pond, Bladensburg pike, May 4, 1898.

12. Ranunculus obtusiusculus Raf.

Eastern Branch marsh at Bennings road, south side.

22. Ranunculus acris L.

Though occasionally found, I doubt if this is well established at any point within our range.

15. Ranunculus micranthus Nutt.

Hillside above Chain Bridge; near Kendall Green.

6. Thalictrum purpurascens L.

Feeder Dam Island; Plummer's Island; Seven Locks. This is a gregarious plant of rank growth, although not very tall.

***7*a*. Thalictrum coriaceum** (Britton) Small.

Common on hillsides, among thickets, etc.

5. Thalictrum dioicum L.

Well-shaded banks, Rock Creek Park; Little Falls on the Virginia side.

40. Papaver dubium L.

Plummer's Island; abundant along New-cut road near Conduit road and on a neighboring estate May 30, 1899.

45. Fumaria officinalis L.

Occurs occasionally in waste ground, and was found in considerable quantity in the truck land near Belleview Magazine, and even on the uncultivated hillsides, in 1898.

***76*a*. Lepidium apetalum** Willd.

Waste ground, Holmead Manor, May 15, 1898; dumping ground, river front, May 28, 1898; Eckington, May 25, 1900.

78. Thlaspi arvense L.

Potomac flats, one specimen, 1900. This plant is evidently not established here.

***78*a*. Thlaspi perfoliatum** L.

Waste ground north of Virginia avenue, May 15, 1898; a considerable patch.

68*a*. Sisymbrium altissimum L.

Below the old Naval Observatory, in fruit, June 7, 1897; since seen in several places, but apparently not spreading.

***74*a*. Brassica Napus** L.

Becoming very abundant.

***74*b*. Brassica juncea** (L.) Coss.

Chain Bridge station, July 4, 1896; later at Anacostia and on dumping ground on the Potomac flats.

52. Barbarea Barbarea (L.) MacM.

A form corresponding to *B. vulgaris arcuata* A. Gray was collected on a roadside at Cleveland Park, May 14, 1899.

52*a*. Barbarea stricta Andrz.

Potomac flats near dumping ground, May 11, 1898.

49*a*. Roripa hispida (Desv.) Britton.

Jackson City, August 1, 1899.

62*d*. Cardamine arenicola Britton.

Very abundant in moist ground on the Potomac flats east of the railroad, 1900.

A Cardamine appearing intermediate between this and *C. Pennsylvanica* and growing on dry wooded hills requires further attention.

62*a*. Cardamine parviflora L.

Woods, Kendall Green.

72*a*. Camelina microcarpa Andrz.

This name applies to all the specimens I have seen, and probably to all those formerly taken as *sativa*. This plant was observed quite overrunning a field on New-cut road east of Conduit road, May 30, 1899.

56. Arabis patens Sulliv.

South slope of the High Island ridge, in fruit, May 21, 1898.

71. Erysimum cheiranthoides L.

Plummer's Island, June 22, 1897; Potomac flats, July 10, 1899.

***71*a*. Conringia orientalis** (L.) Dumort.

A single specimen on dumping ground, rear of propagating grounds, in 1899.

***79*a*. Cleome spinosa** L.

Dumping ground on New-cut road, July 11, 1890. Seen in the previous year near Pennsylvania avenue southeast, and in 1900 on dumping ground along the river front.

249. Spiraea salicifolia L.

This can no longer be considered rare, as it has been observed in Kenilworth swamp in small quantity; at the foot of the long hill on the Glen Echo railroad; in a swamp in south Arlington; near Sligo, Maryland (Pollard); and on the edge of a bog north of Berwyn.

254. Rubus argutus Link.

Our common high-bush blackberry. I am as yet uncertain whether or not we have *R. nigrobaccus* Bailey.

***256*a*. Rubus trivialis** Michx.

Bennings, and swamp above Hyattsville.

254*a*. Rubus Enslenii Tratt. (*R. villosus humifusus* of Ward's Flora.)

High ground near Dalecarlia reservoir, May 15, 1896; Seven Locks, May, 1897. Later found at Lakeland, etc., and probably very common. Trattenick's and Torrey's type specimens, as shown in Bailey's "Evolution of our Native Fruits," pp. 363 and 376 differ as to the form of the leaves. Both forms can be duplicated from our material. Our plant has

commonly one blooming stem of last year's wood, a young shoot for the year to come, and often a dead stalk of the preceding year. Fruiting stem often only from one to two feet long and ascending or nearly erect.

*255*a*. **Rubus villosus roribaccus** Bailey.

A plant thought to correspond to this name grows near the First lock and on higher ground near the adjacent District line. The stems are 4 or 5 feet long, spreading, not prostrate, sometimes low, but often 2 or 3 feet from the ground. One clear case of rooting at the tip was observed. The prickles are slender, but formidable, especially on less vigorous branches, where they multiply. Only trifoliolate leaves have been observed, but others may exist on young shoots. The leaflets are oval or oblong lanceolate, the larger 3 inches long by 1⅝ inches wide, doubly serrate with cuspidate teeth, finely appressed pubescent beneath, in a less degree above. The splendid flowers have the petals (including the claw) an inch long, suborbicular, slightly ovate or obovate. Fruit not yet seen. The whole plant is on a larger scale than *R. villosus* (*R. Canadensis* of authors) and when it is well known it will certainly be regarded as a distinct species. Possibly it is a different plant from Professor Bailey's.

261. Geum vernum (Raf.) Torr. & Gray.

Woods north of Glen Echo railroad, April 29, 1900.

267. Alchemilla arvensis (L.) Scop.

A few specimens in dry ground near Holmead swamp, 1898.

*268*a*. **Agrimonia mollis Bicknellii** Kearney.

Linnaean Hill road, August 18, 1899. I had noticed the peculiarity of this form before I saw its description by Bicknell (Bull. Torr. Club **23**: 547, 1896).

264. Rosa humilis lucida (Ehrh.) Best.

I have specimens at least approaching this variety, from beside the railroad near Cowdon's station, south Arlington.

278*a*. **Malus angustifolia** (Ait.) Michx.

A small tree apparently of this species stands west of the railroad on the edge of the dumping ground at Eckington, (May 25, 1900). The leaves almost duplicate those of a specimen from Florida so determined by Nash. There is a specimen in the U. S. National Herbarium, collected I think by Dr. Parry in 1871, credited to the District of Columbia. If this determination proves correct it will be a fair question whether the trees mentioned in Ward's Flora as *Pyrus coronaria* are not also of this species.

*287*a*. **Amelanchier spicata** (Lam.) Dec.

Great Falls, May 30, 1899, in fruit. Mr. Sudworth says he has found this near the city.

281. Crataegus cordata (Mill.) Ait.

Roadside, Riggs road beyond the Northwest branch: a grown tree with numerous progeny.

*283. **Crataegus rotundifolia** (Ehrh.) Borck.

Dry woods, Riverdale, May 19, 1901. Specimen seen also from beyond Tenleytown

*285. **Crataegus flava** Ait.

Roadside, south Arlington, July 8, 1899, in fruit.

*285*b*. **Cotoneaster pyracantha** (L.) Spach.

Two bushes along a fence, New-cut road near Conduit road, May 30, 1899. I looked in vain for fruit in November, 1900.

*246*a*. **Prunus cuneata** Raf.

Bank of ditch one mile north of Berwyn, May 6, 1900.

*246*b*. **Prunus Avium** L.

A large spreading tree thought to belong to this species, Glen Echo Heights, in flower, April 29, 1900. Also a large specimen with the habit of a forest tree, either *P. Avium* or *P. Cerasus*, in the woods above Aqueduct Bridge, Virginia side. Both these species, according to Mr. Sudworth, have run wild here.

*246*c*. **Prunus Mahaleb** L.

In the valley east of Cleveland Park, May 7, 1896; now destroyed. Border of the Woodley woods toward Cleveland Park, May 11, 1899, with green fruit.

199*a*. **Trifolium dubium** Sibth.

Near Conduit road beyond the District line, May 15, 1896; not then recognized. Later near Cleveland Park, etc.

*196*a*. **Trifolium incarnatum** L.

Roadside, Bladensburg pike, May 17, 1898.

*200*a*. **Amorpha fruticosa** L.

A well-grown specimen stood in waste ground at the rear of the propagating grounds, and was in flower May 28, 1898.

*217*a*. **Meibomia arenicola** Vail.

Dry bank, Suitland, September 8, 1898.

*217*b*. **Meibomia glabella** (Michx.) Kuntze.

Hillside above First Lock, August 31, 1897; Woodley Park, September 15, 1899.

*223*a*. **Lespedeza Nuttallii** Darl.

Woodley Park, August 27, 1897; near Ardwick, September 6, 1897; Paint Branch region, September 3, 1900. The collection here extends ist known range.

*219*a*. **Lespedeza frutescens** (L.) Britton.

A narrow-leaved and a broad-leaved form.

220*a*. **Lespedeza striata** (Thunb.) H. & A.

Since the publication of Ward's Flora this has been introduced, and has spread far and wide. On gravel along railroad tracks it sometimes takes the form of a mat.

*226*a*. **Vicia villosa** Roth.

On dumping ground, September 2, 1897; seen frequently since.

225. Vicia tetrasperma (L.) Moench.

Takoma Park, 1896; Giesboro road, 1899.

226. Vicia hirsuta (L.) Koch.

Waste ground, Potomac flats: among the truck lands below Anacostia.

224. Vicia sativa L.

I have plants with narrow and with broad leaves: the latter are perhaps distinct from *V. angustifolia* Roth, but the separation is not easy.

***229*a*. Vigna Catjang** L.

Found occasionally on dumping grounds.

231*a*. Falcata Pitcheri (Torr. & Gray) Kuntze.

Abundant in the river swamps; also occurs near streams back from the river.

229*b*. Dolichos Lablab L.

Found on several occasions on dumping grounds.

153*a*. Oxalis corniculata L.

Abundant on the Agricultural grounds not far from the building. Collected with flowers and fruit December 4, 1900.

153*b*. Oxalis filipes Small.

Common. Blooms from May to the end of September, the stem gradually elongating and falling over, but not rooting. My specimens show pretty clearly, however, that this plant develops some short, creeping stems.

153. Oxalis stricta L.

Common. Begins blooming a little earlier than *O. filipes*, and seems to finish mainly by the end of June, but it is found more or less in flower throughout the summer, the stem elongating moderately. It forms little clumps of stems with a decumbent base which may be two or three inches long. Besides the transverse ridges there are two well-defined longitudinal ridges on the face of the seed and a groove on its margins.

153*c*. Oxalis cymosa Small.

Very common. Begins to blossom late in May and continues throughout the season, the stem elongating greatly.

153*d*. Oxalis grandis Small.

Plummer's Island, June 22, 1897.

144*a*. Linum medium (Planch.) Britton.

More abundant than *L. Virginianum*, the species easily distinguishable. The difference between these plants was clearly explained in Ward's Flora.

***99*b*. Polygala cruciata** L.

Brightwood swamp, August 16 and September 22, 1897. Also in the Paint Branch swamps in some quantity, and at Lakeland.

97. Polygala viridescens L.

Flats opposite Alexandria, July 1, 1899. Only station found by me.

99*a*. **Polygala Curtissii** A. Gray.

Addison Heights, July 22, 1896, abundant. Also at Bennings and Bladensburg. Perhaps our most common species.

100*b*. **Polygala Nuttallii** Torr. & Gray.

Near Brightwood swamp, July 24, 1897; since collected on the flats opposite Alexandria, and one mile north of Berwyn. It seems to prefer the vicinity of swamps.

102*a*. **Polygala Senega latifolia** Torr. & Gray.

Common. Our plant, however, seldom has the leaves "2 inches long", and some specimens growing with the others have the leaves nearly or quite narrow enough for the type.

801. **Phyllanthus Carolinensis** Walt.

This plant can no longer be regarded as rare. I have collected or observed it on denuded banks in the up-river region, on the electric road near St. Asaph's, on the gravelly flats, especially west of the road at Jackson City (abundant), at a point on Riggs road near Northwest Branch, and near Bladensburg.

*801*a*. **Crotonopsis linearis** Michx.

In a flat moist field perhaps three-quarters of a mile north of Berwyn, July 28, 1900.

802*a*. **Acalypha gracilens** A. Gray.

The smaller grayish leaves (often broader than would be expected from the figure in Britton and Brown's Flora), and the slender outer branches of the typical form separate this fairly from *A. Virginica* in general appearance. The protrusion of the staminate flowers from the involucre is not a reliable character, as some of the finest *Virginica* I have seen has them well exserted. On feeble plants or branches the involucre is sometimes almost obsolete. A low, stout form of this species occurs on broken ground without the slender branches, and with an abundance of small leaves and fruit.

*800*a*. **Euphorbia dentata** Michx.

Sandy field, Seven Locks, September 25, 1897; waste ground, river front, very abundant in 1900. Common about Harper's Ferry. The variation in the width of the leaf is quite extraordinary.

798. **Euphorbia Ipecacuanhae** L.

Sandy knoll, Hyattsville, east of creek, May 4, 1898; near Lutheran Home, May 11, 1901.

799. **Euphorbia dictyosperma** Fisch. & Mey.

Near Captain Jones' place beyond Chevy Chase Lake, and in great abundance in a meadow opposite Forest Glen, May 17, 1900.

305*a*. **Callitriche heterophylla** Pursh.

What I take to be a form of this was collected in a warm pool at Great Falls, May 30, 1899. The broad leaves are entirely absent. Normal form, Bladensburg, June 27, 1897.

184. **Rhus aromatica** Ait.

This plant is rather common around Harper's Ferry, and also in the

vicinity of Manassas, and may therefore be looked for on our southern border as well as in the up-river region, where, as reported by Ward, our only specimen has been found.

163. Euonymus Americanus L.

Common. I enter this name in order to note that the *E. Americanus oboratus* of Ward's Flora is doubtless a mistake, as the true *oboratus* is very distinct, and its occurrence here, so far as I know, has not been confirmed.

***176*a*. Acer pseudo-platanus** L.

Spontaneous along New-cut road in the hollow above Georgetown College grounds; leaves collected November 11, 1900.

174. Acer saccharum Marsh. (*A. saccharinum* of Ward's Catalogue.)

A tree of some size, but partially blown over was seen in a ravine at Widewater; also a grown tree in a similar condition on Plummer's Island. Many seedlings were scattered about the last named locality.

***178*a*. Cardiospermum Halicacabum** L.

Dumping ground, Eckington, July 28, 1898. Also later at different places on the Potomac flats.

155. Impatiens biflora Walt. (*I. fulva* of Ward's Catalogue.)

Many specimens with pinkish and mottled flowers were found growing with the ordinary form on boggy ground at Bennings, September 7, 1899.

172. Vitis rupestris Scheele. (*V. vulpina* of Ward's Catalogue.)

Near Great Falls and Chain Bridge.

138*a*. Sida hermaphrodita (L.) Rusby. (*Sida Napaea* Cav.)

Potomac flats, both sides of the railroad and near the old fish pond, July 27, 1896, and later.

142*a*. Hibiscus Syriacus L.

Escaped on the grounds of the old observatory (July 6, 1898), and probably elsewhere.

142r Hibiscus Trionum L.

Propagates itself in my yard, where it was planted several years ago.

***142*c*. Gossypium herbaceum** L.

Waste ground, Potomac flats, October 25, 1900; several plants with flowers and ripe bolls.

129*a*. Hypericum densiflorum Pursh.

A few good plants in the bog one mile north of Berwyn, July 28, 1900. The bushes were about five feet high.

133*a*. Hypericum majus (A. Gray) Britton.

Howard Hill reservoir, August 26, 1896.

80. Helianthemum Canadense (L.) Michx.

Kenilworth, Suitland, and near Takoma Park. I do not find the species easy to distinguish when in fruit, but the Takoma specimens, the only ones seen in flower, belonged to *H. Canadense*.

81. Lechea minor L.

I have failed to find this plant anywhere except at Lakeland, where I

saw a few individuals. It is possibly not rare; but I suspect that the material formerly referred here belongs partly or wholly to one of the following species.

81*a*. **Lechea racemulosa** Michx.

Hyattsville, September 7, 1896; later at Lakeland, Congress Heights, and in the Paint Branch region. Plants gathered at the last station September 3, 1900, have the fruit and leaves of *racemulosa*, but are most remarkable in habit, forming low, bushy, and extremely dense clumps, heavily laden with fruit. A few specimens in the National Herbarium somewhat approach them. They were on ground which had been burned over the previous year.

81*b*. **Lechea tenuifolia** Michx.

Addison Heights, July 25, 1896. Probably our most common species.

*88*a*. **Viola Brittoniana** Pollard.

Moist ground north of Berwyn, May 6, 1900; later seen near Lakeland. Adding these stations to that of Mr. Pollard's at Hyattsville, it may be expected that this violet will be found at intervals along the low ground from Bladensburg to Berwyn and perhaps farther.

86*c*. **Viola sororia** Willd

Woods, Forest Glen, May 17, 1900.

82. **Viola lanceolata** L.

Bennings, both in the wet ground near the railroad and the low ground towards the river; low ground above Riverdale.

86*a*. **Viola affinis** LeConte.

Abundant in woods at foot of bluff on the Giesboro road some distance beyond Congress Heights, April 27, 1899. Seen also on the Potomac flats east of the railroad.

84. **Viola cucullata** Ait.

Boggy ground beyond Silver Hill, May 25, 1899, and at points in Suitland.

*84*a*. **Viola laetecaerulea** Greene, n. sp.

Acaulescent, with short, stout, branching rootstock, the foliage at time of petaliferous flowering upright, 4 to 7 inches high, distinctly hirsutulous, the young and growing peduncles, petioles, and cucullate unexpanded leaves often rather densely so; leaves from rounded or subreniform-cordate to cordate-ovate, and 1½ to 2½ inches long, evenly and very distinctly crenate, obtuse, light green; peduncles stoutish, scarcely equalling the petioles; sepals oblong, obtuse, very narrowly scarious-margined, often more or less plainly serrulate-ciliolate; petals rather broad, well rounded, indistinctly veined, the odd one very conspicuously shorter and every way smaller than the others, all light-blue, the lateral ones with a strong tuft of hirsute subclavate or perhaps flattened white hairs; apetalous flowers and their capsules on short horizontal and more or less completely subterranean peduncles; capsules oblong.

In sandy loam, open ground, Potomac flats below Long Bridge, a few clumps only, these closely associated with an abundant growth of *V.*

papilionacea. Specimens were collected April 27, May 1, and May 10, 1900, those of the first date not yet in full bloom, those of the last past their prime. Apetalous flowers May 28, 1901. Duplicate type material is deposited in the U. S. National Herbarium. In autumn, while *V. papilionacea* was still green and flourishing, no traces of *V. laeteaerulea* could be found; and this again seems to indicate its affinity for *V. cucullata*. However, the plant is certainly a near relative of the common and very beautiful *V. papilionacea* of Pursh. At the same time, it curiously simulates the real *cucullata*, that is, the glabrous pale-green blue-flowered bog-meadow violet, in not only the color of the corollas and the pale-green herbage, but even in the form of the leaves, length of leaf-stalks, etc., etc.

The species is to me the most interesting new one of all that I have been called upon to name and describe in recent years; and this because of the fact that in the volume of LeConte's colored drawings done eighty years since, and now in my possession, just this plant is the subject of one of his most beautiful figures; and I have for several years been wondering when this almost mythical plant, so clear in its specific characters according to LeConte's pencil and brush, would make its appearance, and where it would come from. I had studied the plate so often, and had the character and aspect of the species so well in mind that instantly upon beholding Mr. Steele's specimens, I felt sure of their identity with what LeConte so long ago had drawn and painted, but had never published or even named.

There is, however, a Latin note in LeConte's handwriting under the figure, which may be rendered thus: "Differs from the common *V. cucullata* by the width and rotundity of its petals, the odd one being small, as in *V. palmata*. The petals are not venulose. The petioles are sometimes villous."

In reading this note of his, it must be remembered that by *V. cucullata* LeConte meant not what I have established to be true *cucullata*, i. e., the bog-meadow plant, but rather the *V. papilionacea*.—*Edw. L. Greene.*

85*a*. Viola domestica Bicknell.

I find a violet agreeing with the description of this near Captain Jones' place beyond Chevy Chase Lake, at Widewater, and in other places, but my observation tends to confirm the view of Mr. Pollard that this is only a variety or form of *V. papilionacea*.

89*a*. Viola Labradorica Schrank. (*V. canina sylvestris* of previous lists.)

A good many plants of this species have grown in a little glen along Rock Creek above the entrance of Piny Branch, where it was noticed especially in 1899. Seen also above Military Road; but it is a scarce plant.

325. Opuntia Opuntia (L.) Coult.

Plummer's Island, June 22, 1897.

307. Rotala ramosior (L.) Koehne. (*Ammannia humilis* of Ward's Catalogue.)

This plant is common in very wet places along the river (Chautauqua, Jackson City, Hunting Creek, Bennings). Instead of the 2 to 6 inches of the Illustrated Flora it grows with us from 6 to 12 inches high, and a similar stature is shown by some specimens in the National Herbarium. It branches freely when there is space, but when crowded the stem tends to be simple. Alternate with the acute divisions of the calyx at its four corners are broad appendages which fold inward over the ovary. The flowers do not seem to be "very small".

310. Decodon verticillatus (L.) Ell.

In the swamp about the mouth of Oxen Run, August 18, 1900, then coming into bloom; a small number of specimens.

***311*a. Chamaenerion angustifolium** (L.) Scop.

I saw a plant of this species at Takoma Park in 1896 or 1897.

311. Epilobium coloratum Muhl.

The form *umbrosa* Haussk. was collected at Bethesda, September 9, 1899. The leaves are very large.

318*a*. Kneiffia longipedicellata Small.

Near Bladensburg, June 27, 1896. Not rare in the eastern part of our territory. It grows in open ground; when well developed it is a very fine plant, far more handsome than *K. fruticosa*.

350. Aralia racemosa L.

Found by me only on Pimmitt's Run, where there were a good many fruiting specimens on August 19, 1900.

***352*a. Hedera Helix** L.

A patch of the common ivy was seen in the woods below Congrees Heights in 1897 or 1898.

348*a*. Caucalis Anthriscus (L.) Huds.

Of late years this plant has spread extensively on the Potomac flats, and should it reach cultivated grounds it might prove troublesome.

***329*a. Eryngium planum** L.

There were several specimens on the Massachusetts avenue terrace in the summer of 1899, and also in 1900.

331. Sanicula Marylandica L.

Near Chevy Chase, at Glencarlyn, and in a ravine at Glen Echo.

330*a*. Sanicula gregaria Bicknell.

Feeder Dam Island, May 15, 1896; later along the river on the Virginia side above Aqueduct Bridge, at Cabin John Bridge, and in a shady valley beyond Cleveland Park, June 2, 1898, at which time I became acquainted with Bicknell's description.

***338*b. Foeniculum Foeniculum** (L.) Karst.

Seen once on the Canal road and once on the Potomac flats dumping ground. It does not establish itself here.

***339*a. Chaerophyllum bulbosum** L.

West of the fish pond, with flowers and fruit June 27, 1899; bulbs were

collected the following spring. This plant greatly resembles *Conium maculatum* in general appearance. It seeds freely, and the seeds spring up abundantly around the old plant, but it does not appear to increase much.

338*a*. Scandix pecten-Veneris L.

Dumping place near propagating grounds May 3, 1898; also on Massachusetts Avenue extended.

331*a*. Conium maculatum L.

Rock Creek ravine near M street bridge, July 11, 1898; very abundant during that and the following season. Also on waste ground near Virginia Avenue, and on dumping ground at New-cut Road.

***340*a*. Carum Carui** L.

Two plants were collected on the river-front dumping ground in 1898.

356*a*. Cornus circinata L'Her.

A specimen of this species was brought by a lady to the Department of Agriculture from Takoma Park in 1899.

563*a*. Clethra alnifolia L.

One of the Paint Branch swamps, September 23, 1899; Berwyn, July 28, 1900; also at another point north of Berwyn, and in considerable quantity near the creek at Lakeland. This fine shrub can therefore be considered as definitely belonging to our flora.

***557*a*. Azalea viscosa hispida** (Pursh) Britton. (?)

A plant was found in sphagnous ground south of Four Mile Run, also one at Nauck's, agreeing exactly with some local specimens of *A. viscosa glauca*, except that the flowers were of a rich flesh color instead of pure white. This suggests variety *hispida;* but the specimens seen were of low stature, and the pedicels were not more hispid than those of some specimens of *glauca*.

I am of the opinion that the plant which has passed as variety *nitida* here is only a state of variety *glauca*. This is not to say that there is not a true *nitida* elsewhere.

556. Kalmia angustifolia L.

One of the Paint Branch swamps. September 3, 1900, in fruit.

554. Leucothoe racemosa (L.) A. Gray.

The best stations I have found for this plant are: Bennings near the railroad, and flats opposite Alexandria near the bluffs.

***544*a*. Gaylussacia dumosa hirtella** (Ait.) A. Gray.

South of the electric road junction, Takoma Park, June 7, 1897. First noticed by Mr. T. H. Kearney on the same occasion. I have not found this plant since.

***544*b*. Vaccinium atrococcum** (A. Gray) Heller.

Bennings, April 13, in flower; Kenilworth swamp, May 10 and June 13; in ripe fruit, 1898.

575. Lysimachia quadrifolia L.

The form with all the leaves opposite was found at Lakeland, July 8, 1900, and seemed to be common.

577. Lysimachia Nummularia L.

A large patch on a roadside at Bladensburg; also on Potomac flats near the dumping ground.

572. Steironema lanceolatum (Walt.) A. Gray.

To Professor Ward's localities may be added Kenilworth swamp, and low ground north of Beaver Dam Branch.

574. Steironema quadriflorum (Sims.) A. S. Hitchc. (*S. longiflorum* of Ward's Catalogue).

Seen by me only on the river bank above Chain Bridge on the Virginia side, coming into bloom July 4, 1896.

579*a*. Centunculus minimus L.

A few specimens near Bladensburg.

601*b*. Polypremum procumbens L.

One plant at Kenilworth, August 11, 1898.

603. Gentiana Saponaria L.

I have both stout and very slender specimens (the latter from Takoma Park) which it seems necessary to refer to this species.

606. Bartonia Virginica (L.) B. S. P.

Kenilworth swamp and one of the Paint Branch swamps.

589. Asclepias rubra L.

Sparingly in Kenilworth swamp and north of Beaver Dam Branch; also in the Paint Branch region, but more abundant in a swamp on the Columbia pike, south Arlington.

590. Asclepias purpurascens L.

Glen Echo railroad at foot of the long hill, June 24, 1898.

596. Asclepias quadrifolia Jacq.

Woods near Chevy Chase railroad and on Plummer's Island; very scarce.

599. Ampelanus albidus (Nutt.) Britton.

Not rare along the canal, and once observed near Tenleytown Junction. Also in various places at Jackson City, where fruits were collected September 21, 1898.

601. Vincetoxicum hirsutum (Michx.) Britton. (*Gonolobus*, of Ward's Catalogue.

On a bluff off from the Giesboro road, May 20 and July 22, 1899. The shape of the cup in the corolla agrees better, however, with that assigned to *V. Carolinense*.

600. Vincetoxicum obliquum (Jacq.) Britton.

Abundant on the slope above the canal road.

***630*a*. Quamoclit Quamoclit** (L.) Britton.

Steadily self-propagating in my yard; also dumping ground, Potomac flats.

630. Quamoclit coccinea (L.) Moench.

Suitland, cultivated ground, September 8, 1899; later, several places on the dumping grounds.

631. **Ipomoea hederacea** Jacq. (*I. Nil.*, of Ward's Catalogue.)
Corn field on the way to Plummer's Island, August 24, 1897; also Great Falls, Jackson City, and Chain Bridge.

635. **Convolvulus spithamaeus** L.
Suitland road and south Arlington, near Cowdon's station.

640*b*. **Cuscuta polygonorum** Engelm. (*C. chlorocarpa* of Ward's Flora.)
Mr. L. H. Dewey collected this plant near Four Mile Run in October, 1898, and he has so determined specimens collected by me on the Potomac flats, August 3, 1900.

609. **Phlox maculata** L.
Swampy places in south Arlington; low ground north of Riverdale.

614*a*. **Hydrophyllum Canadense** L.
Ravine at Chain Bridge station, August 1, 1900, in fruit; a limited number of specimens.

617*a*. **Phacelia dubia** (L.) Small.
High Island, and at various points in the Seven Locks region.

616. **Phacelia Purshii** Buckl.
Plummer's Island, May 31, 1897.

629*a*. **Heliotropium Europaeum** L.
Street in Alexandria, September 28, 1897.

*627*a*. **Asperugo procumbens** L.
Dumping ground, along the river front at various points, May 3 and May 28, 1898.

628*a*. **Lycopsis arvensis** L.
A single plant in waste ground, U street between Seventeenth and Eighteenth streets, June 16, 1897; also in the previous year, the same individual.

*731*a*. **Scutellaria incana** Muhl.
Near the canal at Chautauqua, August 17, 1896, then past its prime; not since met with.

732*a*. **Scutellaria parvula** Michx.
Linnaean Hill road, May 18, 1899.

729. **Scutellaria saxatilis** Ridd.
Rediscovered on the Virginia shore about a mile above Chain Bridge, October 7, 1900; seen at Harper's Ferry the previous September.

*735*a*. **Dracocephalum parviflorum** Nutt.
Fugitive specimens were collected on U street in 1896.

713. **Koellia mutica** (Michx.) Britton.
Paint Branch bottom, near Berwyn, September 3, 1900; the only time it has been seen by me. I have collected all the other species mentioned in Ward's Flora.

*707*a*. **Lycopus Sherardi** n. sp. (*L. Virginicus* Michx. and many authors, at least in part; not Linnaeus).
Perennial by filiform branching stolons bearing pairs of leaves ½ inch

long or less, often mere bracts; stems erect or ascending, more or less branching, in exceptional cases 3 feet long, commonly from 15 inches to 2 feet, the internodes 1 to 2 inches long, dark green or partly purple, sparingly or rather densely clothed with a short grayish upwardly appressed pubescence; leaves 1½ to 3 inches long, the upper portion ovate or ovate-lanceolate, with an entire acuminate point ½ inch long or less, rather coarsely dentate or serrate, below strongly incurved-cuneate and entire, forming a margined petiole of varying length which tapers quite down to the verticillasters; the leaves when young bright purple, becoming dark green; verticillasters many-flowered, commonly very dense, sometimes somewhat looser, small or (perhaps only abnormally) large; flowers very small, the calyx 4-toothed or sometimes 5-toothed, the teeth ovate or narrower, acutish; the corolla long-exserted, distinctly shorter than that of *L. Virginicus;* one or two sterile filaments occasionally, but not always discernible.

The description is based chiefly upon material from the vicinity of Washington, D. C., where the plant is common in mucky soils and on the wet river flats. The exceptionally robust specimens referred to grew on the Potomac flats. The U. S. National Herbarium contains, besides local material, specimens from Maine, Connecticut, West Virginia, Kentucky, Tennessee, and South Carolina, showing a distribution over the coastal plain and southwestward in the mountains, without indication of high altitude.

Linnaeus founded his *Lycopus Virginicus* on Gronovius. The latter in his Flora Virginica, edition of 1762, quotes the Linnaean character and that of his own first edition, adding: "Ab hac verticillis magis approximatis, et foliis profundius serratis differt Lycopus Canadensis glaber foliis integris dentatis D. Sherard, quae species nomine Lycopi flore minimo albo, foliis purpureis glabris acuminatis serratis, odore remisso n. 181 inscripta." As the plant above described is beyond reasonable doubt the same as Sherard's, it seems fitting to note this historical connection in its name. The verticillasters, indeed, are not always "more approximate", but they may very well have been so in the specimens observed by Gronovius, as they are sometimes only an inch apart. The leaf margin is more deeply toothed than in *Virginicus*, the flower is smaller than in any other of our species, and the leaves are the only decidedly purple ones I have seen and are smooth and acuminate. The stem is indeed not glabrous, but the pubescence is not very obtrusive, and would not make a strong point against a description in most respects so good. I have made no note regarding the odor.

707. Lycopus Virginicus L.

I have made a partial study of the remaining *Virginicus* material in my possession and in the National Herbarium, and the judgments formed may perhaps be of interest. Excluding for the present *L. macrophyllus* Benth., and variety *quercifolius* Pursh, the remaining material includes some forms which considered by themselves might seem worthy of specific distinction. But these distinctions are not borne out, and some of our local material can scarcely be placed on one side of the line rather

than the other; nor do I find even varietal differences. Bentham's *macrophyllus*, on the other hand, seems likely to be at least a good variety. The leaves are much enlarged and sinuate-lobed. If this merely occurred here and there with the type we might explain it as due perhaps to a combination of shade and rich soil; but on the contrary it has a somewhat self-consistent range which is far from identical with that of the type, namely, from Oregon eastward through Nebraska and Minnesota to northern and central Michigan. There is also a Missouri specimen that seems to belong to this. Bentham cites Pursh's variety *quercifolius* as a synonym, of which the locality is given as the high mountains of Virginia. As the National Herbarium contains no specimen from that region, I can express no opinion concerning it. It is conceivable that this plant of rather northern range is represented in the Allegheny Mountains, however. If the two are found identical, the name *quercifolius* would take precedence of *macrophyllus*.

708. Lycopus rubellus Moench.

River swamp, foot of First street, southeast, September 21, 1896; Hunting Creek and Eastern Branch swamp at M street extended, September, 1899. There is also a specimen in the National Herbarium collected by Dr. Vasey near Chain Bridge. The specific name doubtless refers to the pinkish color of the stem.

***709. Lycopus Europaeus** L.

Virginia shore of the Potomac above Aqueduct Bridge, September 29 1900, two specimens.

705 Mentha Piperita L.

"The Point" at Jackson City, and on the Canal road; not abundant in either locality.

***706*a*. Mentha rotundifolia** (L.) Huds.

Cultivated ground in front of the Agricultural building, 1900.

***644*a*. Physalis ixocarpa** Brot.

Neglected ground near dwellings, water front at foot of Fifteenth street, September 30, 1899. It fruited abundantly and appeared again in 1900.

***644*b*. Physalis Virginiana** Mill.

This species or one which I cannot distinguish from it sometimes grows on very low ground, even in the river marsh. On the Potomac flats (August 8, 1896) stems a yard long, lying prostrate on the ground, were observed. The ordinary form, above the railroad trestle beyond Chevy Chase Lake, September 12, 1900.

***642*a*. Solanum Dulcamara** L.

Seen by me only as a dump plant along the river front in 1899.

***642*b*. Solanum pseudocapsicum** L.

A number of specimens of the Jerusalem cherry were found on the margin of dumping grounds on New-cut Road, November 11, 1900. Some were in fruit, and there were a few flowers. The plant probably escaped from the refuse of some greenhouse.

648*a*. Capsicum sp.

A single plant was found in the last-mentioned locality; it was taken home and replanted, and bore fruit of a conical form.

***648*b*. Petunia violacea** Lindl.

A purple petunia, doubtless of this species, appears occasionally on the dumping grounds.

***662*a*. Gratiola sphaerocarpa** Ell.

Pond near Bladensburg pike, May 17, 1898; ditch at Lakeland, Md., August 4, 1900; scarce.

***662*a*. Gratiola viscosa** Schwein.

Eastern Branch swamp south of Bennings road, August 29, 1899; M street extended, September 16, 1899; mouth of Beaver Dam Branch, August 11, 1900. Abundant, especially in the last locality.

663*a*. Ilysanthes attenuata (Muhl.) Small.

Jackson City, August 1, 1899; Bennings, August 29, 1899, less common than *I. gratioloides*. Though on young stems of *gratioloides* the peduncles scarcely exceed the leaves and though on old branches of *attenuata* the peduncles may exceed them, on the whole the peduncles of the former are much longer, sometimes a full inch in length. In my specimens the leaves of *attenuata* are larger, and it has a much greater tendency to root at the nodes.

664. Micranthemum micranthemoides (Nutt.) Wettst. (*M. Nuttallii* of Ward's Catalogue).

Still growing at Hunting Creek, September 4, 1899.

667. Veronica scutellata L.

Feeder Dam, July 22, 1897.

679. Pedicularis lanceolata Michx.

Still found at Hunting Creek, September 4, 1899, at that date just coming into flower.

686*a*. Utricularia subulata L.

Howard Hill reservoir, abundant, May 22, 1899.

***686*b*. Utricularia biflora** Lam.

Specimens collected on the flats at Chain Bridge, August 16, 1899 and August 1, 1900, seem to belong to this species, and an earlier collection near the Second lock is perhaps the same. If this determination is correct it would throw some doubt upon the existence of *U. gibba* recorded in Ward's Flora, although of course it is possible we have both.

***688*a*. Catalpa Kaempferi** Sieb. & Zucc.

A tree determined by Mr. Geo. B. Sudworth as a hybrid of this species stands near Virginia Avenue and Eighteenth street, appearing as if spontaneous.

***692*a*. Martynia Louisiana** Mill.

Dumping ground, river front, August 22, 1900, a single plant; in fruit later. Flowers rather small and numerous: perhaps not this species.

691. Ruellia strepens L.

A remarkable plant perhaps belonging to this species was collected

near the canal at First lock, June 9, 1897. The flowers are single and borne on leafy-bracted axillary peduncles after the manner of *R. pedunculata* Torr. The calyx segments, however, are lanceolate, not awn-like, and the bracts, though much larger, have about the form of those found in the flower clusters of *R. strepens*.

689. Ruellia ciliosa Pursh.

My material includes a simple-stemmed cinereous plant found in dry woods, the calyx-segments very hirsute, and a coarser plant with spreading and geniculate-ascending branches, found in open and moister ground, with the calyx-segments less hirsute.

***373*a*. Oldenlandia uniflora** L.

Bennings, low ground toward the river swamp, August 29, 1899.

376. Galium Claytoni Michx.

Eastern Branch Swamp. Doubtless the *G. trifidum* of Ward's Flora.

***382*a*. Galium tinctorium** L.

South Arlington near Cowdon's station, June 5, 1898; near Silver Hill, May 26, 1899.

***620*b*. Asperula arvensis** L.

A single specimen found on dumping ground in 1897 or 1898.

***363*a*. Viburnum molle** Michx.

Kenilworth, June 11, 1899; also at First Lock, near Tenleytown Junction, in Terra Cotta swamp, and near Eckington. I present this name with great confidence, notwithstanding the fact that the stellate pubescence in our plant is almost obsolete on the under side of the leaf and often scanty elsewhere. It holds out best on the petioles of the upper leaves and on the peduncles. In one collection from Terra Cotta there are remains of a soft stellate pubescence in the axils of the veins on the lower leaf surface; but usually the pubescence in this situation appears simple and undistinguishable from that of *V. dentatum*. A specimen came to the Department of Agriculture from near Baltimore with a thin soft stellate pubescence on the whole under surface of the leaf. The pubescence on the petioles is stiff and very different, although also stellate. In two distinct cases this species was found flowering when *V. dentatum* was advancing into fruit. In one instance *dentatum* seemed to be blooming late. I have not fully verified the fruit characters, but the drupe seems larger than the *V. dentatum*.

***360*a*. Vibunum cassinoides** L.

A bush found in the sphagnous ground at Takoma Park was in flower while the more common *nudum* was in bud, and being in other respects different from that species, appears fairly to belong to *V. cassinoides*.

365. Triosteum angustifolium L.

I have had one or two specimens from the railroad level at Glen Echo.

369. Lonicera Japonica Thunb.

Found near Naucks with decidedly red flowers.

383. Valeriana pauciflora Michx.

Abundant on Plummer's Island as well as on High Island.

386. Valerianella radiata (L.) Dufr.

Great Falls, May 30, 1999,. Also Potomac flats and Mount Vernon.

***324*a. Micrampelis lobata** (Michx.) Greene.

Waste ground, July 21 and September 19, 1898.

***543*b. Campanula rapunculoides** L.

In an old graveyard, Woodley, June 13, 1896; neglected ground, Massachusetts Avenue extended, June 13, 1899.

543*a*. Campanula aparinoides Pursh.

Tenleytown Junction and Glen Echo Heights, in swales.

543. Campanula Americana L.

On the slope above Canal road, and I think also on Pimmitt Run.

***529*a. Lactuca hirsuta** Muhl.

Flats opposite Alexandria; Linnean Hill road, etc. The pubescence in our plant appears to be confined to the stem, except for a few hairs on the midrib of the veins beneath.

***525*a. Crepis pulchra** L.

This appeared in some quantity in June, 1898 and 1899, on the dump near the propagating grounds.

***524*a. Hieracium Marianum** Willd.

One or two specimens believed to be this were collected in 1896 in the woods on the Virginia shore of the Potomac some distance above Aqueduct Bridge.

525. Hieracium paniculatum L.

Woods near one of the runs at Takoma Park, August 11, 1897; hillside east of Zoological Park, August 3, 1897. The specimens of the latter collection were remarkable on account of the relatively stout stem and elongated panicle.

***533*a. Nabalus albus integrifolius** (Cass.) Britton.

Bladensburg, September 6, 1896; Glen Echo Heights, September 3, 1899.

470*a*. Xanthium strumarium L.

Plants collected at Rosslyn, September 13, 1900, come within the description of Britton and Brown; and others collected near the canal at the District line September 18, 1896, I would on the whole also refer here. The *X. strumarium* of Ward's Flora must have been mainly *X. Canadense*.

388. Vernonia Noveboracensis (L.) Willd.

Common in low ground. For the sake of comparison with the next, I note here that this species is frequently of a bushy habit, the stem emitting straight, slender, ascending branches, bearing the heads clustered at the ends; that the inflorescence is composed of such branches, only shorter, and that when the stem is more strict it still tends to send out some such branches from the axils below the inflorescence proper; that the leaves vary somewhat in width and amount of pubescence beneath, but not surprisingly; that the awns of the involucral bracts are rather flexuous, erect in bud, later usually conspicuously spreading, but rarely

reduced in length to mere cusps; and finally, that the pappus is of a purple brown color, fading grayish.

388*a*. Vernonia glauca (L.) Britton.

Serratula glauca L.

Vernonia Noveboracensis latifolia A. Gray.

Vernonia Noveboracensis tomentosa Britton. Not *Chrysocoma tomentosa* Walt., nor *Vernonia tomentosa* Ell.

Mostly on hills; Linnaean Hill road, Rock Creek Park, Glen Echo Heights, and various points on the Virginia side of the Potomac. Also at Harper's Ferry, particularly on Maryland Heights, at an altitude of 1,000 feet. I have given much outdoor attention to this plant, and as it does not seem to be well understood, I subjoin a revised description:

Stem slender to medium stout, strict nearly or quite to the inflorescence, striate-angled, puberulent. Leaves light green above, pale and puberulent or glabrate beneath, the larger from 5 to 7 inches long, and from 1½ to nearly 3 inches wide, the upper portion oblong or oval, acuminate or at least acute, below more or less abruptly incurved-contracted into a margined petiole tapering nearly or quite to the insertion, the narrow portion of variable length; the upper leaves smaller and more nearly cuneate at the base; inflorescence spreading and rather flat-topped, the branches stout, zigzag, densely puberulent, sometimes a little tomentose; involucre about 3 lines broad, the scales cuspidate, subulate-acuminate, or short-awned, the exposed portion purple throughout, or green with purple edges and tips, webby-ciliate, the awn, when present, often more or less upwardly barbellate; pappus straw-colored, from nearly white to a rather bright yellow; achenes from one-fourth to one-fifth as thick as long.

The diagnosis in the Hortus Elthamensis of Dillenius, upon which the Linnaean *Serratula glauca* was based, alludes to the light-colored pappus, but recent authorities have taken no account of this conspicuous and substantial character, nor do they seem to have attached any importance to the peculiar contraction of the lower part of the leaf, nor to have laid any stress upon the difference, in comparison with *Noveboracensis*, in the habit and inflorescence. As to the involucral scales, the copious material examined shows that they are commonly either abruptly contracted into a short or long cusp, or gradually narrowed to a subulate point with no fast line between the two types, the cuspidate form being, however, the more common. This account, moreover, is sustained historically: for the figure in the Hortus Elthamensis represents the bracts, not, indeed, as awned, but as subulate-acuminate, and Dr. Gray states that "the [Linnaean] specimen has many aristate-tipped bracts". To accept Dr. Britton's description of the bracts as "acute or mucronate" would be to throw out a large part, if not all of the material I have seen, and indeed to leave much of it without a name; for aside from the fact that it is not *Noveboracensis* at all, a large portion would be excluded from the variety *tomentosa* Britton by the characters, "leaves densely puberulent beneath" and "involucre purple", as the pubescence is not generally very dense, and the involucre is not seldom

predominantly green. Further than this, the *Chrysocoma tomentosa* of Walter and the *Vernonia tomentosa* of Elliott are narrow-leaved plants. Elliott lays stress on this character, and Walter's expression is so distinct that nothing short of clear herbarium evidence could justify us in referring to his species a plant with the leaves above described. Besides this, the National Herbarium contains two specimens that are almost certainly the *tomentosa* of Elliott, and barring herbarium evidence unknown to me, probably that of Walter also. They are characterized by their linear-lanceolate, scantily and finely serrate leaves, which are whitish or grayish tomentose beneath, and by the rough and tomentose inflorescence, almost exactly the characters given by Elliott. Mr. T. H. Kearney, Jr., who collected one of these specimens in southern Virginia, states that it is the most hydrophile of the [eastern] Vernonias, actually growing in shallow water. Elliott's plant correspondingly grew in ditches. The awns of Mr. Kearney's specimen are broken off, but in the other specimen of the two above referred to, collected by C. F. Hyams in South Carolina, the awns are present and well developed, although I am not prepared to say that they are longer than in normal *Noveboracensis*. I am accordingly inclined to regard Elliott's species as valid, and Mr. Kearney also favors that view.

There is in the National Herbarium a specimen collected by Professor Alexander Winchell in Alabama, which has the pappus and the leaf-form of *V. glauca*, though the leaves are rather smaller; but the latter are densely puberulent and the awns are long for *glauca*. This might be the variety *tomentosa* of Britton were it not for the long awns; it belongs, however, not to *Noveboracensis*, but to *glauca*.

390*c*. Eupatorium maculatum L.

Kenilworth, September 27, 1898. My specimens fail to show the flat-topped corymb.

***395*a*. Eupatorium serotinum** Michx.

The only station known to me for this species is a point on the Eastern Branch flats a mile above Benning's road.

391*a*. Eupatorium altissimum L.

Specimens from Bethesda Park and elsewhere agree in form of leaf with the figure in Britton and Brown's Flora; but collections from along the river at Glen Echo, Chautauqua, and Great Falls show a remarkable broadening of the leaf without increase of length. The width sometimes reaches 1½ inches. Compare *Kuhnia eupatorioides*.

***400*a*. Eupatorium cannabinum** L.

A single specimen on the edge of the tide-bed at Hunting Creek on the Alexandria side, a few rods from the wagon road, September 4, 1899. Only a part of the plant was taken and it may be found again.

403. Kuhnia eupatorioides L.

Specimens were collected September 18, 1899, on the side of the ravine at Difficult Run with the larger leaves ovate-lanceolate, contrasting widely with the linear-lanceolate form which is common here. This

form is mentioned in Gray's Synoptical Flora. In the original description the leaves are characterized as broadly lanceolate.

404. Lacinaria scariosa (L.) Hill. (*Liatris* of Ward's Catalogue).

A few specimens from the roadside and the side of the ravine at Difficult Run, September 18, 1899. This, with previously reported collections, proves that this plant truly belongs to our flora, and is perhaps native.

405. Lacinaria graminifolia (Walt.) Kuntze.

Specimens with white corollas were found east of Bladensburg pike, September 25, 1898.

410. Solidago flexicaulis L. (*S. latifolia* of Ward's Catalogue).

Plummer's Island and the declivity on the Virginia side above Chain Bridge.

***423*a*. Solidago Elliottii** Torr. & Gray.

In swamp at Kenilworth, September 18, 1897; also above Hyattsville on the west side of the creek, on Paint Branch about three miles above Berwyn, and in Suitland. The specimens agree reasonably with each other and with the description.

***423*b*. Solidago neglecta** Torr. & Gray.

Kenilworth swamp, September 18, 1897; also in one of the Powder Mill swamps, and at Hyattsville, east side of creek.

415. Solidago rigida L.

The station in Woodley Park, on the slope facing the bridges, has for some years afforded a good many specimens, but is in danger of obliteration from close pasturing.

***412*a*. Solidago juncea ramosa** Porter & Britton.

A few specimens near the Glen Echo railroad in 1896.

411. Solidago nemoralis Ait.

Specimens with erect instead of recurved racemes, giving the plants a very unusual appearance, were collected September 23, 1896, near the Soldiers' Home. It may be compared with the preceding.

***423*c*. Solidago Canadensis procera** (Ait.) Torr. & Gray.

Near the Rockville railroad beyond Bethesda, September 30, 1900.

***428*a*. Aster divaricatus persaliens** Burgess.

A form near this was collected August 27, 1899, south of Four Mile Run near Cowdon's.

***428*b*. Aster Schreberi** Nees.

Plants supposed to be this were collected August 18 and September 27, 1899, on the Linnaean Hill road.

***435*a*. Aster cordifolius alvearius** Burgess.

Canal road, and bluff on the Virginia shore above Chain Bridge.

***434*a*. Aster undulatus loriformis** Burgess.

This or an approximating form, Upper Paint Branch, September 23, 1899; also various places in the Rock Creek region.

*431*a*. **Aster phlogifolius** Muhl.

Woodley Park, September 28, 1896, not then recognized: Linnaean Hill road, September 27, 1899: high land a mile or two from Great Falls, Maryland side, October 3, 1899.

448. **Aster Novae-Angliae** L.

Abundant at points on the Conduit road. A fine growth also on the Potomac flats in 1900.

*445. **Aster puniceus firmus** (Nees) Torr. & Gray.

Tide marsh, Brick Haven, October 10, 1896; foot of First street southeast, September 21, 1897.

446. **Aster prenanthoides** Muhl.

At various points up the river, from near Chain Bridge to Great Falls, particularly across the canal at Cabin John. Never abundant.

*433*a*. **Aster laevis Potomacensis** Burgess.

Connecticut Avenue Bridge, September 21, 1896; M street extended near Eastern Branch, September 16, 1899; Leesburg pike near Difficult Run, September 18, 1899.

429*a*. **Aster elodes** Torr. & Gray.

Very abundant in boggy ground. It is time to break the habit of calling this a variety of *A. Novi-Belgii*.

*429*a*. **Aster Radula** Ait.

Not only at the main Paint Branch station (here first collected by Mr. H. W. Olds, I think,) but also a mile further east. In boggy ground at Suitland, September 8, 1899, I found a much altered form with but one to three heads, the leaves merely very finely scabrous.

442. **Aster salicifolius** Lam.

Feeder Dam, Hunting Creek, and Great Falls. This is, of course, the *A. carneus* or *A. aestivus* of Ward's Flora, but I have not met with anything to match the other name.

*443*a*. **Aster paniculatus acutidens** Burgess.

Potomac flats, October 9, 1897.

430. **Aster lateriflorus** (L.) Britton. (*A. miser* of Ward's Catalogue.)

Of the now recognized varieties, I think I can distinguish *grandis* Porter, from Alexander's Island, and *pendulus* (Ait.) Burgess, from Takoma Park.

450. **Doellingeria umbellata** (Mill.) Nees.

Takoma Park, mainly near electric railroad junction, October, 1898, 1899. Rare.

450*a*. **Doellingeria humilis** (Willd.) Britton.

Rather common in boggy ground, Terra Cotta, Bennings, etc. The leaves of this species are not relatively as broad as might be expected. This I suspect is wholly or in part the *Diplopappus umbellatus* of earlier record.

449. **Doellingeria infirma** (Michx.) Greene. (*Diplopappus cornifolius* of Ward's Catalogue).

The specific name doubtless refers to the procumbent tendency of one

form. This habit seems surprising in the same species with forms that are rigidly erect, but I have failed to find other differences.

*463*a*. **Polymnia Canadensis radiata** A. Gray.

Specimens with manifest but not conspicuous rays were collected at Glen Echo, July 16, 1897.

*480*a*. **Helianthus microcephalus** Torr. & Gray.

Thicket on the slope south of Four Mile Run near Cowdon's, August 8, 1899.

485. **Helianthus decapetalus** L.

Besides the form with thin and ample leaves this has a form with the leaves smaller and firmer; the latter was collected near Cowdon's station.

482. **Helianthus strumosus** L.

Glen Echo railroad, Connecticut Avenue Bridge, bluffs near Little Falls, M street extended near Eastern Branch. Some of the specimens have considerable pubescence on the under side of the leaves, but it is doubtful whether they are the true variety *macrophyllus*.

482. **Helianthus hirsutus** Raf.

There is a well-defined sunflower common in our region for which Britton and Brown's Flora, so far as I can see, makes no provision, but which might very well come under *H. hirsutus* as defined in the Synoptical Flora. According to the latter the stem is "commonly smooth below, rough and hispidulous above", according to the former the stem is "densely hirsute". In our plant, which is of branching habit, the stem is smooth and sometimes glaucous below, or with mere vestiges of roughness, the branching part rough and at the extremities somewhat hirsute. The leaves are broadest near the base and long-tapering, scabrous with prickles above and scabrous-pubescent with sparse white horn-shaped hairs beneath. I have little doubt that the description in the Synoptical Flora was intended to cover a plant essentially the same as ours. That of the Illustrated Flora is more true to Rafinesque, but it leaves our plant without a name.

490. **Coreopsis tinctoria** Nutt.

An occasional escape. South Washington and the Potomac flats dumping ground.

494*a*. **Bidens connata** Muhl.

Borders of a pond between Arlington and the river, August 24, 1896; Bennings, September 7, 1899.

*494*b*. **Bidens comosa** (A. Gray) Wiegand.

Pond below Arlington, September 14, 1896; Jackson City, September 4, 1896; Bladensburg pike, September 16, 1899.

493. **Bidens discoidea** (Torr. & Gray.) Britton. (*Coreopsis* of Ward's Catalogue).

Bennings, in boggy ground on the flats, September 7, 1899.

493*a*. **Bidens** sp.

A single specimen agreeing with some of the material under *B. aristosa* in the National Herbarium was found on the brink of the water at

Great Falls on the Virginia side, and later a few specimens lower down. It has not yet been determined.

502*a*. Chrysanthemum Parthenium (L.) Pers.

Canal road near Georgetown, July 9, 1899; dump ground, June 5, 1901.

***502*e*. Chrysanthemum Balsamita** L.

Vacant ground, corner of Fifteenth street and Florida avenue, September 1, 1899.

***501*a*. Tanacetum vulgare crispum** DC.

Seventh street road beyond Brightwood, August 2, 1899; seen also at Great Falls. I am not sure that I have seen the type here.

***502*d*. Artemisia annua** L.

Glen Echo, between the carriage and electric roads, September 25, 1897, abundant; also a few specimens in South Washington, about the same date, and later near Eastern Branch at Pennsylvania avenue.

502*c*. Artemisia vulgaris L.

Roadside, Rosslyn, August 8, 1899.

503. Arnica acaulis (Walt.) B. S. P. (*A. nudicaulis* of Ward's Catalogue).

Takoma Park, south of the electric road junction, May 19, 1897; seen also on the slope south of Four Mile Run near the Southern railroad, and at a point east of Takoma.

510*a*. Arctium tomentosum (Lam.) Schk.

Dumping ground, river front, June 22, 1898; not common. Our ordinary species seems to be *A. minus* Schk.; *A. Lappa* as now understood I do not find.

517. Centaurea Calcitrapa L.

Various places in South Washington; seen also on the Bladensburg pike not far from G street.

***514*a*. Carduus nutans** L.

South Washington, east of gate to the Arsenal grounds, June 23, 1897. I took some pains to destroy the plant, and do not know whether it survived.

512*a*. Carduus odoratus (Muhl.) Porter.

This maintains a precarious existence in Woodley Park.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

JUNCUS COLUMBIANUS, AN UNDESCRIBED RUSH FROM THE COLUMBIA PLAINS.

By FREDERICK V. COVILLE.

At the request of Professor C. V. Piper, of Pullman, Washington, I publish at this time a description of a Juncus from the Columbia Plains, which belongs to the difficult and perplexing group of which Watson's *Juncus nevadensis* is the best known representative.

Juncus columbianus sp. nov.

Plant perennial, 20 to 70 cm. high, tufted, erect; rootstocks about 2 mm. in diameter, horizontal, the yearly growth commonly 1.5 to 3 cm.; stems nearly terete, commonly 1.5 to 2 mm. in diameter at the base, much slenderer above, with 1 or 2 or rarely 3 leaves; basal leaves few, sheaths with broad membranaceous margins, auricles conspicuous, 2 to 3 mm. long, and blades terete, sometimes 20 cm. in length, inconspicuously nodose, usually erect; cauline leaves similar to the basal, the upper with shorter blades; leaves of the inflorescence reduced to scarious bracts, the lowest occasionally with a herbaceous blade; inflorescence rarely exceeding 7 cm. in height, bearing commonly 4 to 8 or sometimes even 20 glomerules, rarely reduced to a single one; perianth 3 to 3.5 mm. in length, at maturity of a pale reddish brown color or stramineous, its parts narrowly lanceolate with setose apex, stamens 6 or sometimes reduced to 3 by the abortion of those opposite the inner perianth parts,

the anthers about as long as the filaments, often a little longer; style conspicuous, about 2 mm. in length; capsule equaling the perianth or a little shorter, cinnamon-colored or sometimes castaneous at the apex, narrowly oblong, acute at the apex, the style usually persistent and its basal portion developed into a distinct beak though not splitting with the dehiscence of the capsule; seed pale brown, oblong, 0.4 to 0.5 mm. in length (the body about 0.3 mm. long), the outer coat with a tendency to be loose, reticulated in about 20 to 26 longitudinal rows, the areolae usually isodiametrical, transversely plurilineolate.

Type specimen in the United States National Herbarium, collected July 20, 1896, in wet meadows near Pullman, Washington, by A. D. E. Elmer (No. 235).

Juncus columbianus differs from typical Californian *Juncus nevadensis* in the paler color of its flowers, comparatively shorter anthers, less well-defined beak of the capsule, and much paler seeds with nearly twice as many rows of areolae, always trans-lineolate. The recently described *Juncus suksdorfii* Rydberg* is another plant of the same group, more closely resembling *nevadensis* than *columbianus*. It is distinguishable from the latter by its greater size and robustness, its height commonly 60 to 100 cm. and the annual growth of its rootstocks 5 to 10 cm., usually larger inflorescence, and almost always dark brown longer perianth 4 to 5 mm. in length, anthers much longer than the filaments (commonly 2 to 3 times as long), and body of the capsule not plainly visible at maturity at the mouth of the perianth, as is usual in *columbianus*.

The specimens of *Juncus columbianus* in the National Herbarium are as follows:

Washington:

Klickitat County, "springs, Columbia River," *W. N. Suksdorf*, August 8, 1881.

Klickitat County, near Columbus, *W. N. Suksdorf*, June 10, 1886.

Douglas County, Egbert Spring, altitude about 1300 feet, *Sandberg* and *Leiberg*, July 1 and 5, 1893 (Nos. 358,388).

Douglas County, Wilson Creek, *Lake* and *Hull*, August 6, 1892 (No. 389).

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*Rydberg, Bull. Torr. Club, **26**: 541, 1899.

Spokane County, near Spangle, *W. N. Suksdorf*, June 30, 1884.

Spokane County, Marshall Junction, *C. V. Piper*, July 2, 1896 (No. 2281).

Whitman County, Pullman, *A. D. E. Elmer*, July 20, 1896 (No. 235).

Oregon:

Gilliam County, Pine Creek, *J. B. Leiberg*, June 8, 1894 (No. 196).

Blue Mountains, *W. C. Cusick*, June, 1884 (No. 1201).

Idaho:

Nez Perces County, along Hatwai Creek, *J. H. Sandberg*, May 27, 1892 (No. 261).

Montana:

Gallatin County, Bozeman, *P. A. Rydberg*, July 22, 1895 (Nos. 2210, 2212a).

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

THE GENERIC NAMES MYRMECOPHAGA AND TAMANDUA, AND THE SPECIFIC NAMES OF THE OPOSSUMS OF THE GENUS DIDELPHIS.

BY J. A. ALLEN.

In the 'American Naturalist' for February, 1901 (pp. 143–145), Mr. Oldfield Thomas refers to recent articles by Mr. Rehn and myself concerning the names *Myrmecophaga* and *Didelphis*. Without going into the matter with sufficient care I assented* to Mr. Rehn's contention† that the Linnæan *Myrmecophaga* was not tenable for the Great Anteater, known as *Myrmecophaga jubata* Linn., but I have to confess that I had not access to Marcgrave, and gave the matter only passing attention, as my special question at the time was the status of the genus *Didelphis*. As Mr. Thomas has shown, *Myrmecophaga* is perfectly tenable for the Great Anteater, and its proper specific name is *tridactyla* Linn. 1758 (*jubata* Linn. 1766). In concluding his notice of *Myrmecophaga*, he says: "As a result I claim that *Myrmecophaga tridactyla* Linn. should be the name for the Great Anteater, Uroleptes and Cyclopes remaining as before for the other genera of the family."

*Bull. Am. Mus. Nat. Hist., XIII, p. 185, Oct., 1900.

†Am. Nat., XXXIV, p. 185, July, 1900.

It appears to me, however, that *Uroleptes* is not the proper name to take the place of *Tamandua* Gray, 1825, where it stands as a *nomen nudum*, becoming only properly habilitated, as shown by Dr. Palmer, by Lesson in 1842. In this case *Uroleptes* has undoubted priority over *Tamandua*, but it appears that F. Cuvier in 1829,* used the same name, slightly varied in orthography, for the same group one year earlier than the publication of *Uroleptes*. Cuvier recognized three genera of his family "Les Myrmécophages," namely: (1) "Les Tamanoirs, *Myrmecophaga* Linn.," (2) "Les Tamanduas, *Tamanduas*," and (3) "Les Didactyles, *Didactyles*." *Myrmecophaga* included only the Great Anteater, the genus being properly attributed to Linnæus. *Didactyles* is the same as *Cyclopes* Gray, 1821, leaving the second genus, *Tamanduas*, for the other members of family, namely the Tamanduas of naturalists. The name *Tamanduas* is used in as strictly a technical sense as either of the other names adopted by Cuvier for the other members of the family Myrmecophagidae, and I see no reason why the name *Tamanduas* is not tenable from Cuvier, 1829, for the group of Anteaters included in *Uroleptes* by Wagler one year later.

Respecting the name *Didelphis*, I am gratified to find that Mr. Thomas supports my contention† for its tenability. A word, however, respecting the earlier specific names applied to various members of this group. As is well known Linnæus's *D. marsupialis* was a composite group based on references to (1) the Virginia Opossum, (2) the Guiana Opossum, and (3) the large Mexican Opossum, the latter being the Tlacuatzin of Hernandez. It appears to me that the most satisfactory way of dealing with this composite group is to follow the usual method, whether the group be specific or generic, namely, the principle of elimination. The name *marsupialis* must, of course, be retained for some member of the composite group. As the first member to receive a special name was the Guiana Opossum, named *Didelphis karkinophaga* by Zimmermann in 1783, this name should be applied in a specific sense to the large Opossums of northeastern South America. The next member of the original *marsupialis* group to receive a name was the Virginia

*Dict. des Sci. Nat., LIX, p. 501, 1829.

†Bull. Am. Mus. Nat. Hist., XIII, pp. 185–188, Oct., 1900.

Opossum, named *D. virginiana* by Kerr in 1792. This leaves of the identifiable forms included under the original *D. marsupialis* Linn. the large Opossum of Mexico, namely the Tlacuatzin of Hernandez, to which the name *marsupialis* must evidently restricted. As *D. karkinophaga* has obtained some currency for the large Opossums of northeastern South America, and as *D. virginiana* has been currently accepted for the Opossum of the United States, the present ruling very little disturbs the nomenclature of the group. The restriction of *D. marsupialis* to the large Mexican Opossum simply takes the place of *Didelphis californica* of Bennett, which as a specific designation has never had much currency.*

*For a fuller discussion of this case see Allen, Bull. Am. Mus. Nat. Hist., XIV, pp. 163, 164, June, 1901.

VOL. XIV, PP. 95-96 JUNE 27, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW SHREW FROM SWITZERLAND.*

BY GERRIT S. MILLER, JR.

Among some shrews from Switzerland recently purchased by the United States National Museum is a strikingly characterized species of *Crocidura* to which none of the names based on members of the genus can be applied. It may be called:

Crocidura mimula sp. nov.

Type.—Adult female (skin and skull) No. 105,801, United States National Museum. Collected at Züberwangen, St. Gallen, Switzerland, December 1, 1900, by Ernst H. Zollikofer. Original number, 192.

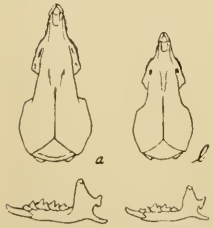

FIG. 1.—*a. Crocidura russula, b. C. mimula* (natural size).

Characters.—Form, dentition, and general appearance as in *Crocidura russula*, but size conspicuously less (hind foot only 12 (11), greatest length of skull 16 instead of 19–21).

Color.—Entire dorsal surface sepia, faintly darker over lumbar region, the hairs showing bright silvery reflections when held in certain lights. Underparts dull ochraceous-buff, not sharply contrasted with color of sides. Chin whitish. The bases of the hairs are everywhere blackish slate, but this color does not appear at surface except irregularly and indistinctly on belly. Feet yellowish white. Tail ochraceous-buff, its upper surface tinged with sepia.

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Skull and teeth.—Although scarcely larger than that of *Sorex minutus*, the skull of *Crocidura mimula* retains the general form characteristic of *C. russula*. The rostral portion, however, is relatively shorter and wider than in the larger animal. In the type specimen the antorbital foramina are larger and more conspicuous, particularly when the skull is viewed from above, than in any of the specimens of *C. russula* with which I have compared it.

Teeth as in *Crocidura russula*, except for their noticeably smaller size.

Measurements.—External measurements of type: total length, 105; head and body, 72; tail vertebræ, 33; hind foot, 12 (11).

Cranial measurements of type: greatest length (exclusive of incisors), 16 (21):* greatest postorbital breadth, 7.8 (10); greatest antorbital breadth, 5.6 (7); least interorbital breadth, 3.8 (4.4); mandible, 8.4 (11); entire maxillary toothrow, 7.4 (9.4); entire mandibular toothrow, 6.8 (9).

Specimen examined.—One the type.

Remarks.—*Crocidura mimula* requires no special comparison with *C. russula*, as its size and the form of its skull serve to distinguish it at a glance.

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*Measurements in parenthesis are those of the skull of an adult female *Crocidura russula* from St. Gallen.

VOL. XIV, PP. 97-98 JUNE 27, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

THE ALPINE VARYING HARE.*

BY GERRIT S. MILLER, JR.

In the first century B. C. the varying hare of Switzerland was described by Varro.† It was known also to Pliny;‡ and, in fact, nearly all writers on the mammals of Europe down to the present time have mentioned the animal. When the varying hare of northern Europe became known it was supposed to be the same as the Swiss animal, so that the names *timidus* Linnæus, *alpinus* Erxleben, and *variabilis* Pallas, were applied collectively to both. Melchior§ is apparently the only writer who has questioned this assumed identity. Five specimens of the Swiss hare in the United States National Museum show conclusively that the species is distinct from that of Sweden. In memory of its first describer it may be known as:

Lepus varronis sp. nov.

Type.—Adult male (skin and skull) No. 105,832 United States National Museum. Collected at Grisons, Heinzenberg, Canton of Graubünden.

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†De Re Rustica, III, cap. XII.

‡Naturalis historia, III, cap. LV.

§Den danske Stats og Norges Pattedyr, p. 79, 1834.

Switzerland, December 5, 1900, by Ernst H. Zollikofer. Original number, 196.

Characters.—In winter pelage (summer coat not seen) externally similar to *Lepus timidus* Linnæus. Skull and teeth smaller and much less robust than in the Swedish animal.

Color.—The winter pelage is pure white throughout, to base of hairs, though usually with an inconspicuous sprinkling of black hairs on back and tail. Ears faintly clouded with grayish brown along anterior margin, and conspicuously tipped with black. The black area is about 12 mm. in width, but its boundaries are not clearly defined, and it is noticeably sprinkled with white hairs. A very narrow line of short black hairs borders the eyelids. Whiskers mixed white and black. Soles of feet yellowish brown. Claws rather dark horn-color.

Skull.—The skull of *Lepus varronis* is readily distinguishable from that of *L. timidus* by its much smaller size. In fully adult males of the alpine hare the skull is barely larger than in females from the Helsingland, Sweden, while as compared with males from the same locality the basal length is about 12 mm. less. Aside from its size the skull shows numerous differences in form. It is in general less robust and more slender, particularly in the rostral portion. The supraorbital processes are smaller and narrower than in the Swedish animal, a difference which is especially noticeable when skulls of males are compared, but which is also evident in the females. The audital bullæ are relatively a trifle smaller than in *Lepus timidus* and the cribriform portion of the floor of the braincase immediately in front of each is less flattened.

Teeth.—The teeth are smaller than in *Lepus timidus*, but I can detect no tangible differences in form.

Measurements.—External measurements of type: total length, 582; tail vertebræ, 53; hind foot, 164.

Cranial measurements of type: greatest length, 92 (103)*; basal length, 77 (86); basilar length, 70 (79); henselion to posterior edge of bony palate, 34 (40); least (lateral) length of bony palate, 6.6 (7); posterior edge of bony palate to hamular, 23 (25); length of incisive foramen, 23 (27); greatest breadth of incisive foramen, 9 (10.4); diastema, 27 (31); zygomatic breadth, 46 (53); least interorbital breadth, 16 (17); greatest breadth of braincase, 32 (34); greatest breadth of both nasals together, 19 (23); least breadth of both nasals together, 13 (16.4); greatest (diagonal) length of nasals, 39 (46); depth of braincase at anterior end of basioccipital, 27 (30); maxillary molar series (alveoli), 17 (20); mandible, 67 (78); diastema, 20 (25); mandibular molar series (alveoli), 18 (21).

Specimens examined.—Five, all from the Canton of Graubünden.

Remarks.—The Alpine hare differs from the varying hares of northern Europe in the characters that would be expected to result from its relatively limited range and the less favorable conditions under which it doubtless exists.

*Measurements in parenthesis are those of an adult male *Lepus timidus* from Helsingland, Sweden.

VOL. XIV, PP. 99-104 JULY 19, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

SIX NEW MAMMALS FROM COZUMEL ISLAND, YUCATAN.

BY C. HART MERRIAM.

Early in April, 1901, E. W. Nelson and E. A. Goldman, while engaged in field work in Yucatan under the auspices of the Biological Survey of the U. S. Department of Agriculture, visited the island of Cozumel and spent two weeks in collecting mammals and birds. During this period they secured 190 specimens of birds and 51 specimens of mammals. The mammals comprise six species, all of which are new. They consist of a Raccoon, a Nasua, an Opossum, a Peccary, a Rice Rat, and a White-footed Mouse. With the single exception of the Opossum, all are strikingly distinct from their nearest relatives on the mainland. This is the more surprising in view of the fact that Cozumel is distant only 10 miles from the adjacent shores of Yucatan. The Opossum, Rice Rat, and Mouse are larger than the nearest related forms on the mainland; the Raccoon, Nasua, and Peccary so much smaller that they may almost be spoken of as pygmies.

The only mammal heard of which was not secured is a small Gray Fox (*Urocyon*) reported by the natives as rather rare, but more common on the eastern and southern parts of the island. From the accounts it agrees with the Raccoon, Nasua, and Peccary in being much smaller than the mainland species,

Mr. Nelson tells me that shortly before his visit a pair of yellow Agoutis were introduced from the adjacent mainland of Yucatan. One of these was seen in the woods near San Miguel by Mr. Goldman.

In 1898 Oldfield Thomas published a list of 5 species of mammals collected on Cozumel by G. F. Gaumer. These are: *Nasua narica* (=*N. nelsoni*), *Didelphis marsupialis* (=*D. cozumelæ*), *Nyctinomus gracilis*, *Chilonycteris rubiginosa*, and *Artibeus perspicillatus* (Proc. Zool. Soc. London, 1888, p. 129). No bats were obtained by Nelson and Goldman.

Nasua nelsoni sp. nov.

Type from Cozumel Island, Yucatan, No. 108,520, ♂ old, U. S. National Museum, Biological Survey Collection. April 8, 1901, E. W. Nelson and E. A. Goldman. Original No. 14,673.

Characters.—Size small; tail short; color very dark seal brown, grizzled anteriorly.

Color.—Upperparts, belly, legs, and tail uniform very dark seal brown; head and shoulders grizzled with golden fulvous; sides of neck and outer sides of arms grizzled with buffy whitish; throat soiled buffy; ears and stripe on side of neck behind ears whitish; chin and nose all round grayish; gray on upper side of nose forking and sending a gray stripe upward and backward over each eye; lower eyelid and small spot between eye and ear gray; gray of chin separated from color of throat by a broad dusky transverse band.

Cranial characters.—Skull similar in general to that of *N. narica* from eastern Mexico, but only about two-thirds the size of that species; male with a highly developed, strongly arched sagittal crest; female with smoothly rounded braincase without trace of crest; zygomata and bullæ similar to those of *narica* but very much smaller; teeth much smaller, particularly the first and last upper and lower molars; first upper molar not only relatively and actually smaller, but differing markedly in shape, the inner side being cut away anteriorly and posteriorly so that the inner cusp stands out by itself much more narrowly and prominently; first lower molar very small and narrow; last upper molar variable but always narrowly subtriangular, the crown much narrower anteroposteriorly than in the mainland species.

Measurements.—Type specimen (♂ old): total length 795; tail vertebræ 355; hind foot 85. Average of 2 males from type locality: total length 780; tail vertebræ 345; hind foot 83. Average of 4 females from type locality: total length 744; tail vertebræ 328; hind foot 79.

Skull.—Type specimen (♂): basal length 95; occipitonasal length 95; palatal length 66; greatest zygomatic breadth 61; length of molar series on alveoli 16.5.

Procyon pygmæus sp. nov.

Type from Cozumel Island, Yucatan, No. 108,511, ♂ yg-ad., U. S. National Museum, Biological Survey Collection. April 14, 1901, E. W. Nelson and E. A. Goldman. Original No. 14,698.

Characters.—Similar in general to *P. hernandezi*, but only about half the size of that animal; chin and throat separated by a strong band of black; tail yellowish with six or seven annulations.

Color.—Upperparts grizzled grayish with a yellowish tinge along the middle of the back, and rather uniformly mixed with black hairs; top of head grizzled gray; face marked by usual transverse black bar enclosing the eyes and sending up a short dusky streak to the forehead; the black facial band separated from gray of top of head by a whitish band divided in the median line by dusky; ankles dusky; chin, lips and sides of nose whitish; throat crossed by broad band of dusky; underparts grizzled grayish with a yellowish suffusion; fore feet grayish throughout; hind feet grayish with a brownish suffusion especially on outer side; tail yellowish marked with six or seven dark brown or blackish rings which are faint below and much less black above than in the other species.

Cranial characters.—Skull similar in general to that of *hernandezi* but very much smaller; nasals short, expanded and rounded posteriorly; teeth less than half the size of those of *hernandezi;* last upper molar relatively, as well as actually, much narrower; first upper molar relatively smaller so that the middle upper molar is conspicuously larger than the others; premolars above and below more spaced and very much smaller.

Remarks.—This pygmy raccoon is by far the most interesting discovery made by Nelson and Goldman on Cozumel Island. While in many respects it is a miniature of its relative of the adjacent mainland, it possesses characters which would distinguish it at a glance, even if of the same size. Among these characters may be mentioned the broad black throat band, the golden yellow tail, the short posteriorly expanded and rounded nasals, and the peculiarities of the teeth.

Measurements.—Type specimen (♂ yg-ad): total length 667; tail vertebræ 230; hind foot 90. A ♀ yg-ad: total length 665; tail vertebræ 250; hind foot 97.

Skull.—Type specimen (♂ yg-ad): basal length 88; occipitonasal length 88; palatal length (not including spine) 58; zygomatic breadth 59; length of molar series on alveoli 17.

Didelphis yucatanensis cozumelæ subsp. nov.

Type from Cozumel Island, Yucatan, No. 108,498, ♂ ad., U. S. National Museum, Biological Survey Collection. April 16, 1901, E. W. Nelson and E. A. Goldman. Original No. 14,700.

Characters.—Externally similar to *yucatanensis* Allen, but body larger (in 2 ad. ♂s averaging 383, contrasted with 364 in 2 ad. ♂ *yucatanensis;* in 2 ♀s averaging 359 contrasted with 327); tail much shorter (in 2 ♂s averaging 317 contrasted with 354 in 2 ad. ♂ *yucatanensis;* in 2 females averaging 296 contrasted with 370); hind feet same size; skull similar but decidedly larger; *rostrum very much broader; nasals broader and flatter* (especially the anterior ⅔); posterior roots of zygomata standing out more squarely; zygomatic arm of squamosal larger and more broadly expanded vertically; palate broader; anterior rudiment of auditory capsule (sphenoid bulla) much smaller and more irregular in form.

Measurements.—Type specimen (♂ ad.): total length 703; tail vertebræ 324; hind foot 59. Average of 2 males from type locality: total length 700; tail vertebræ 317; hind foot 59. An ad. ♀ from type locality: total length 670; tail vertebræ 299; hind foot 55. Average of 2 females from type locality: total length 655; tail vertebræ 296; hind foot 55.

Tayassu nanus sp. nov.

Type from Cozumel Island, Yucatan, No. 108,516, ♂ ad., U. S. National Museum, Biological Survey Collection. April 7, 1904. E. W. Nelson and E. A. Goldman. Original No. 14,664.

Characters.—Size small; related to *angulatus* but only about two-thirds as large; color not markedly different from that of *angulatus* except nose and chin which are blacker.

Color.—Upperparts finely grizzled black and buffy, with distinct buffy shoulder-stripe (as in *angulatus* and *tajacu*); nose, chin, dorsal stripe (from occiput to tail), ears, and feet, black. The black nose and chin are most conspicuous in the young and are sufficient to distinguish the species from *T. angulatus.*

Cranial characters.—Skull short and broad, especially broad posteriorly, with abruptly spreading zygomata and very large bullæ. Compared with skulls of *angulatus* from Texas and eastern Mexico, the skull is of nearly the same breadth, but very much shorter, with much more abruptly spreading zygomata (anteriorly), giving a very different physiognomy; relatively larger bullæ, and very much smaller molariform teeth, the canines and incisors nearly as large as in *angulatus.* The angle of the jaw is broadly expanded and rounded as in *angulatus,* but differs in having its posterior margin strongly inflexed. In skulls young enough to show the sutures, the nasals are expanded and squarely truncate posteriorly and rather broadly expanded in the middle.

Measurements.—Type specimen (♂ ad.): total length 840; tail vertebræ 32; hind foot 178. Average of 3 males from type locality: total length 823; tail vertebræ 30; hind foot 175. An adult ♀ from type locality: total length 780; tail vertebræ 30; hind foot 177. *Skull* of type: basal length 176; basilar length of Hensel 168; palatal length 120; occipitonasal length 189; zygomatic breadth 100; upper molariform series of teeth 52.

Peromyscus cozumelæ sp. nov.

Type from Cozumel Island, Yucatan, No. 108,449, ♂ ad., U. S. National Museum, Biological Survey Collection. April 11, 1891. E. W. Nelson and E. A. Goldman. Original No. 11,686.

Characters.—Size and tail medium; ears rather large, thin; color dull brown or brownish fulvous; general appearance similar to *P. affinis* Allen,* but slightly larger and somewhat darker and more uniform in color.

Color.—Head and upperparts varying from grayish brown to dull fulvous brown; underparts white, the plumbeous underfur showing through; tail indistinctly bicolor, brownish dusky above, pale yellowish or whitish below (nearly naked); ankles and wrists brownish or dusky; fore and hind feet whitish.

Cranial characters.—Skull of medium size, with rather spreading zygomata, strongly set out and angled anteriorly; nasals broad, flattened, ending about on plane of premaxillæ; incisive foramina rather large and open.

Remarks.—*Peromyscus cozumelæ* appears to have no very close relative. Externally it resembles *P. affinis* Allen, but is darker and has thinner ears and shorter tail. Cranially, however, it differs materially from any species known to me. Compared with *affinis* it may be distinguished by the broader and more squarely elbowed zygomata, flatter and broader braincase, broader nasals, slightly larger bullæ, and heavier teeth. The incisive foramina show considerable variation. In most specimens they are long and their outer borders are evenly convex. In others they are much more broadly open and the outer border fòrms an angle at the maxillo-premaxillary suture. In some specimens they are rather short.

Measurements.—Type specimen (♂ ad.): total length 180; tail vertebræ 80; hind foot 23. Average of 8 males from type locality: total length 181; tail vertebræ 82; hind foot 23.5.

Oryzomys cozumelæ sp. nov.

Type from Cozumel Island, Yucatan. No. 108,462, ♂ ad., U. S. National Museum, Biological Survey Collection. April 8, 1901. E. W. Nelson and E. A. Goldman. Original No. 11,666.

Characters.—Size large; similar to *O. aquaticus* Allen, but darker; ears and hind feet larger; tail much longer and darker.

Color.—Upperparts dark grayish bister with pale fulvous suffusion on sides and rump; in old pelage back (especially rump) rusty red; under-

*My *Peromyscus musculoides* (Proc. Biol. Soc. Wash., Vol. XII, p. 124, April 30, 1898) appears to be at most only a subspecies of *P. affinis* Allen, from which it differs in slightly larger size, larger ears and longer rostrum.

parts varying from soiled whitish to pale buffy salmon; ears dark brown, darkest on outer half; tail dusky, paler below.

Cranial characters.—Skull large and heavy, with strongly marked superciliary beads, long rostrum, and long incisive foramina. Closely related to *aquaticus*, from which it differs in the following characters: anterior roots of zygomata more depressed and less spreading; orbital angle of frontal less marked; posterior part of braincase broader, carrying the lateral beads *outward posteriorly*, so that they form almost a straight line from side of occiput to angle of orbit; incisive foramina longer and more open.

Remarks.—Compared with *aquaticus*, the only species to which it bears any near resemblance, the color in fresh pelage is grayer and darker (less golden fulvous), in worn pelage redder—the rump and hinder part of back more rusty; ears and face darker, the face strongly grizzled with black hairs. The underparts are never buffy yellow as in *aquaticus*.

Measurements.—Type specimen (♂ ad.): total length 332; tail vertebræ 182; hind foot 35. Average of 5 adults from type locality: total length 315; tail vertebræ 176; hind foot 34.5.

VOL. XIV, PP. 105-106 JULY 19, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW BROCKET FROM YUCATAN.

BY C. HART MERRIAM.

One of the most surprising discoveries made by Nelson and Goldman in their recent explorations in Yucatan and Campeche is a new species of Brocket. The animal differs totally in color from *Mazama sartorii*, the only known species from Mexico and Central America, being grayish or drab instead of red. That so large an animal should remain so long unknown to naturalists is probably due to its habit of living in dense undergrowth in the arid tropical forests, where it is rarely seen, even by the natives. Two specimens were obtained: an adult male from Tunkas, Yucatan, and an adult female from Apazote, Campeche. The relationship of the species to *M. nemoriviagus* of South America, I am unable to determine from lack of specimens. The new animal, however, is decidedly larger than *nemoriviagus*. It may be known by the following description:

Mazama pandora sp. nov.

Type from Tunkas, Yucatan. No. 108,273, ♂ ad., U. S. Nat. Museum, Biol. Survey Coll. Feb. 15, 1901, E. W. Nelson and E. A. Goldman. Orig. No. 14,544.

Characters.—Size and ears about the same as in the Red Brocket; color grayish or drab brown; antlers straight spikes (in type specimen

113 mm. long), deeply plicated or furrowed longitudinally; neck haired like rest of body (not scantily as in *M. sartorii*).

Color.—Animal drab brown above and below, becoming grayish on neck; hairs of back annulated subapically with pale fulvous; chin, underlip, front of upperlip, inguinal region, and inner sides of thighs and foreleg white or whitish; anal region and upper side of tail dull fulvous; underside of tail white; ears drab brown with white spot or edging at anterior base of opening; muzzle and sides of face drab brown; anterior base of ear, eyelids, and upperlip washed with fulvous; forehead marked with patches of rusty red; foreleg and fore and hind feet dull fulvous.

Cranial characters.—Skull similar in general to that of *sartorii* but a trifle larger; rostrum broader, especially anteriorly; nasals decidedly longer; *frontals very much broader* behind orbits; lachrymal larger, the lachrymal depression larger and more evenly rounded (basin shaped), outer edge of squamosal root of zygoma with a strong and abrupt upward curve or bend near base; posterior projection of palate broader; foramina ovale more broadly open and looking more directly downward [in *sartorii* they are narrowed and look more obliquely forward and outward]; basioccipital with a strongly developed constriction or notch on each side immediately in front of condyles; mastoids larger, descending on outer sides of paroccipital processes; molariform teeth larger; crown of 2d lower premolar much longer; crown of 3d lower premolar thicker and larger in every way; true molars nearly the same size as in *sartorii* although the last is slightly larger.

Measurements.—Type specimen (♂ ad.): total length 1125; tail vertebræ 140; hind foot 273; height at shoulder 572.

Skull.—Type specimen (♂ ad.): basal length 163; occipitonasal length 157; least breadth of frontals between horn cores and orbits 68; breadth across posterior rims of orbits 73.5; breadth of horn cores just below burr 77; zygomatic breadth 82; least interorbital breadth 44; length of nasals 59; joint length of basioccipital and basisphenoid 45.5; length of upper molar series on alveoli 50; length of antler 113. Adult ♀ from Apazote, Campeche: basal length 160; occipionasal length 161; length of nasals 57.5; breadth of frontals at posterior corner, of orbits 57; least interorbital breadth 39; palatal length 109; length of upper molar series on alveoli 52.5.

VOL. XIV, PP. 107-117 JULY 19, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

DESCRIPTIONS OF TWENTY-THREE NEW POCKET GOPHERS OF THE GENUS *THOMOMYS*.

BY C. HART MERRIAM.

The Mammal Collection of the U. S. Biological Survey still contains a number of apparently nameless species of Pocket Gophers of the genus *Thomomys*. Most of these are here described. In making the necessary comparisons with other members of the genus I have been greatly assisted by Vernon Bailey.

Thomomys latirostris sp. nov.

Type from Little Colorado River, Painted Desert, Arizona. No. $\frac{18003}{24914}$ ♂ ad., U. S. National Museum, Biological Survey Collection. September 22, 1899. C. Hart Merriam and Vernon Bailey. Original No. 504.

Characters.—Size medium; coloration very pale golden fulvous; *rostrum strikingly broad.*

Color.—Upperparts uniform pale ochraceous buff without appreciable admixture of black tipped hairs; underparts, feet, and tail whitish.

Cranial characters.—Skull unique; heavy, massive and angular but not ridged; *rostrum broadly expanded and broadest at base*, the great breadth being in the premaxillæ; nasals constricted in middle, slightly notched behind, and falling far short of premaxillæ; zygomata moderately spreading, angular, their outer sides parallel; bullæ medium, smaller than in *aureus;* interparietal broadly pentagonal.

Measurements.—Type specimen (♂ ad.): total length 232; tail vertebræ 79; hind foot 33.

Thomomys sinaloæ sp. nov.

Type from Altata, Sinaloa, Mexico. No. 96,745, ♂ ad., U. S. National Museum, Biological Survey Collection. March 28, 1899. E. A. Goldman. Original No. 13,607.

Characters.—Size rather large; color dull pale chestnut brown. Related to *cervinus* from Phoenix, Arizona, but darker and with distinctive cranial characters.

Color.—Upperparts dull pale chestnut brown, fading insensibly into paler chestnut fulvous of underparts; region around mouth pale dusky, not sharply contrasted with throat as in *cervinus*.

Cranial characters.—Skull rather large and angular with *strongly spreading depressed and sharply angular zygomata*. Similar in general to *cervinus* but shorter; zygomata more broadly spreading, more depressed, and with more prominent anterior angle; bullæ smaller.

Measurements.—Type specimen (♂ ad.): total length 233; tail vertebræ 73; hind foot 31. Average of 6 adults from type locality: total length 221; tail vertebræ 74; hind foot 31.5.

Thomomys perditus sp. nov.

Type from Lampazos, Nuevo Leon, Mexico. No. $\frac{25605}{32998}$, ♂ ad., U. S. National Museum, Biological Survey Collection. January 22, 1891. C. P. Streator. Original No. 512.

Characters.—Size small; color drab gray; related to *tolteeus* but smaller, grayer, and with distinctive skull characters.

Color.—Upperparts drab gray, strongly mixed with black-tipped hairs and washed on sides with buffy (on sides of shoulders and rump becoming buffy fulvous); region around mouth dusky; underparts and fore legs and feet buffy salmon; hind feet soiled whitish.

Cranial characters.—Skull small; braincase broadly swollen; zygomata moderately spreading, the outer sides parallel; interparietal subquadrate; nasals cuneate, notched behind, and ending about on plane of premaxillæ; bullæ medium or rather small. Differs from *tolteeus* in having more cuneate nasals which are notched instead of truncate behind, and which end about on plane of premaxillæ instead of falling far short of premaxillæ; post zygomatic notch deeper and broader; upper incisors more prominent.

Measurements.—Type specimen (♂ ad.): total length 195; tail vertebræ 59; hind foot 26.5. Average of 5 adults from type locality: total length 185; tail vertebræ 55; hind foot 25.

Thomomys goldmani sp. nov.

Type from Mapimi, Durango, Mexico. No. 58,075, ♂ ad., U. S. National Museum, Biological Survey Collection. December 15, 1893. E. A. Goldman. Original No. 240.

Characters.—Size very small; back bright fulvous; underparts white. Related to *perditus* but color wholly different and cranial characters distinctive.

Color.—Upperparts bright rusty fulvous, moderately mixed with dark tipped hairs; underparts white; nose and region around mouth dusky.

Cranial characters.—Skull very small; like that of *perditus* but rostrum and premaxillæ decidedly narrower and smaller, and nasals falling short of premaxillæ.

Measurements.—Type specimen (♂ ad.): total length 208; tail vertebræ 68; hind foot 30. An adult female from type locality: total length 190; tail vertebræ 60; hind foot 27.

Thomomys baileyi sp. nov.

Type from Sierra Blanca, Texas. No. $\frac{18256}{23179}$, ♀ ad., U. S. National Museum, Biological Survey Collection. December 28, 1889. Vernon Bailey. Original No. 870.

Characters.—Size small; coloration rather pale; upper incisors projecting strongly forward.

Color.—Upperparts pale buffy fulvous, varying to ochraceous and strongly mixed with black-tipped hairs; underparts buffy to salmon; region around mouth dusky; inside of cheek pouches and feet whitish; incisors projecting forward.

Cranial characters.—Skull small; zygomata widely spreading, sometimes broadest posteriorly; temporal ridges marked; interparietal subquadrate; nasals emarginate behind and ending nearly on plane of premaxillæ; bullæ medium. In general the skull resembles that of *toltecus*, but it may be distinguished not only by the protruding upper incisors, but also by the longer nasals which are notched instead of truncate behind, longer rostrum, broader interorbital region, less bulging occiput, and much wider and more open post coronoid notch of mandible.

Measurements.—Type specimen (♀ ad.): total length 220; tail vertebræ 72; hind foot 32. Average of 6 adults from type locality: total length 212; tail vertebræ 68; hind foot 30.

Thomomys nelsoni sp. nov.

Type from Parral, Chihuahua, Mexico. No. 96,451, ♀ ad., U. S. National Museum, Biological Survey Collection. September 18, 1898. E. W. Nelson and E. A. Goldman. Original No. 13,035.

Characters.—Size medium or rather small; related to *baileyi* but color *chestnut* instead of yellowish fulvous, and with distinctive cranial characters.

Color.—Upperparts pale dull chestnut brown mixed on middle of back with black tipped hairs; underparts same color but much paler; nose and region around mouth abruptly dusky; feet whitish, but *brown of hind leg coming well down over ankle and covering part of foot.*

Cranial characters.—Zygomata strongly spreading, broader behind than in front, with well developed anterior angle; temporal impressions marked; interparietal subquadrate becoming subtriangular in old age; nasals narrowly cuneate, notched behind, and falling well short of premaxillæ; bullæ medium; under jaw very long, the postcoronoid notch narrow and completely covered by coronoid process. From *baileyi*, its nearest known relative, it may be distinguished by narrower nasals, narrower interorbital region, strikingly narrower and differently shaped postcoronoid notch, and less protruding upper incisors.

Measurements.—Type specimen (♀ ad.): total length 196; tail vertebræ 60; hind foot 28. An adult male from type locality: total length 207; tail vertebræ 59; hind foot 28.5.

Thomomys cabezonæ sp. nov.

Type from Cabezon, San Gorgonio Pass, California. No. 53,987, ♂ ad., U. S. National Museum, Biological Survey Collection. June 3, 1893. C. P. Streator. Original No. 2906.

Characters.—Size medium, but smaller than *perpallidus* or *aureus;* ears rather large; tail long; color varying from buffy ochraceous (as in *aureus*) to dull salmon brown.

Color. Upperparts buffy ochraceous, buffy gray, or even (in the type and darkest specimen of 7 from type locality) dull drab-brown on back, becoming buffy ochraceous on sides; nose, lips, chin and opening of cheek pouches dusky; underparts varying from whitish to pale salmon.

Cranial characters.—Skull small, angular; zygomata moderately spreading, broadest anteriorly and sharply angular in adults; temporal ridges marked; interparietal rectangular, broader than long in immature skulls; nasals long, with straight sides (not constricted), notched behind, and not reaching near tips of premaxillæ; bullæ medium. Compared with *aureus* and *perpallidus* the skull and jaw are strikingly smaller and lighter, the interparietal quadrangular instead of sub-triangular, the bullæ very much smaller. Compared with *perpallidus* the zygomata are much less spreading.

Measurements.—Type specimen (♂ ad.): total length 235; tail vertebræ 79; hind foot 30. Average of 7 adults from type locality: total length 222; tail vertebræ 78; hind foot 30.

Thomomys aureus pervagus subsp. nov.

Type from Espanola, New Mexico. No. 58,293, ♂ ad., U. S. National Museum, Biological Survey Collection. January 4, 1894. J. Alden Loring. Original No. 1548.

Characters.—Similar to *aureus* but much darker, color chestnut fulvous instead of golden fulvous; upperparts dull chestnut fulvous, the middle part of back broadly mixed with black-tipped hairs; nose and

sides of mouth dusky; chin white; underparts salmon. Nasals broader posteriorly than in *aureus*.

Measurements.—Type specimen (♂ ad.): total length 244; tail vertebræ 76; hind foot 31. Average of 2 males from type locality: total length 245; tail vertebræ 73; hind foot 32.

Thomomys aureus perpes subsp. nov.

Type from Lone Pine, Owens Valley, California. No. $\frac{25031}{125361}$, ♂ ad., U. S. National Museum, Biological Survey Collection. December 23, 1890. E. W. Nelson. Original No. 145.

Characters.—Size rather small; color *buffy gray*, in summer becoming more buffy fulvous.

Color.—Upperparts buffy gray, darkest on head and nose, palest and with strongest buffy suffusion on sides; underparts, feet, and tail buffy whitish. Summer specimens are more buffy fulvous like *aureus*.

Cranial characters.—Skull similar in general to the smaller specimens of *aureus*, but decidedly shorter and with much smaller bullæ.

Measurements.—Type specimen (♂ ad.): total length 215; tail vertebræ 65; hind foot 28. Average of 10 adults from type locality: total length 212; tail vertebræ 66; hind foot 28.5.

Thomomys angularis pascalis subsp. nov.

Type from Fresno, San Joaquin Valley, California. No. $\frac{32753}{147502}$, ♂ ad., U. S. National Museum, Biological Survey Collection. May 1, 1892. C. P. Streater. Original No. 1634.

Characters.—Similar to *angularis* but smaller; upperparts less fulvous (more buffy yellowish); underparts very much paler and often marbled irregularly with patches of white; wrists and ankles usually white; ears smaller and dusky; earpatch obsolete or nearly so. Skull smaller and smoother; the temporal ridges not uniting to form a sagittal crest; interorbital constriction less marked; bullæ larger; angle of under jaw smaller.

Measurements.—Type specimen (♂ ad.): total length 236; tail vertebræ 80; hind foot 32. Average of 4 males from type locality: total length 212.5; tail vertebræ 715; hind foot 30.5. Average of 4 females from type locality: total length 195; tail vertebræ 63; hind foot 28.

Thomomys fuscus fisheri subsp. nov.

Type from Beckwith, Sierra Valley, Plumas County, California. No. 101,238, ♂ ad., U. S. National Museum, Biological Survey Collection. August 3, 1900. Walter K. Fisher. Original No. 1547.

Characters.—Similar to *fuscus* but upperparts very much paler; grayish brown instead of dull fulvous brown.

Cranial characters.—Skull similar to that of *fuscus* but shorter; zygo-

mata more squarely spreading; premaxillæ shorter and broader posteriorly; bullæ less swollen; incisors narrower.

Measurements.—Type specimen (♂ ad.): total length 191; tail vertebræ 62; hind foot 25. Average of 6 specimens from type locality: total length 192; tail vertebræ 58; hind foot 25.

Thomomys myops sp. nov.

Type from Conconully, east base Cascade Range, State of Washington. No. 91,066, ♀ ad., U. S. National Museum, Biological Survey Collection. September 11, 1897. J. Alden Loring. Original No. 4650.

Characters.—Size small; color and external characters generally as in *T. fuscus;* skull peculiar.

Color.—Upperparts dull pale rufous brown; underparts buffy ochraceous, the dark slate underfur showing through; throat, chin, and feet whitish; nose, sides of mouth, ring round eye, and earpatch dull plumbeous, the earpatch darkest.

Cranial characters.—Skull in general similar to that of *quadratus*, but zygomata less quadrate and posterior root shorter; nasals broader, truncate posteriorly, and ending on same plane as premaxillæ, which are remarkably short and truncate posteriorly; bullæ about as in *quadratus* —less swollen than in *fuscus;* under jaw rather massive, about as in *quadratus*—decidedly heavier than in *fuscus.*

Measurements.—Type specimen (♀ ad.): total length 197; tail vertebræ 63; hind foot 26. Average of 7 specimens from type locality: total length 184; tail vertebræ 58; hind foot 24.5.

Thomomys leucodon navus subsp. nov.

Type from Red Bluff, California. No. 57,791, ♂ ad., U. S. National Museum, Biological Survey Collection. December 26, 1893. C. P. Streator. Original No. 3462.

Characters.—Similar to *leucodon* but much smaller; incisors projecting forward, their faces yellow instead of white; upperparts paler and brighter fulvous; underparts buffy ochraceous instead of fulvous.

Cranial characters.—Skull small but very strong and ivory-like in texture; zygomata broadly spreading, broadest posteriorly; nasals cuneate, usually notched behind.

Measurements.—Type specimen (♂ ad.): total length 200; tail vertebræ 67; hind foot 27. Average of 8 specimens from type locality: total length 196; tail vertebræ 65; hind foot 27.

Thomomys uinta sp. nov.

Type from Uinta Mountains, Utah. Altitude 10,000 feet. No. $\frac{22504}{30031}$, ♂ ad., U. S. National Museum, Biological Survey Collection. June 6, 1890. Vernon Bailey. Original No. 1262.

Characters.—Size medium; coloration dark: nose, chin and region around mouth blackish: earpatch black: fore feet and legs dark. Skull long; nasals short.

Color.—Upperparts dull grayish brown with a dull fulvous suffusion and 'pepper and salt' appearance from profuse admixture of black tipped hairs: cheeks and sides of neck grizzled bister: sides grayish or grayish brown: nose, earpatch, and throat dusky: fore legs and feet grayish dusky with a little white at base of toes; hind feet whitish: tail mainly dark above.

Cranial characters.—Skull rather small but larger than that of *fuscus;* zygomata moderately spreading: broadest behind: nasals *short*, falling far short of premaxillæ, and moderately or faintly notched behind: interparietal large, pentagonal or between subquadrate and pentagonal; temporal impressions nearly parallel but not forming ridges as in *talpoides* and *bridgeri;* auditory tubes conspicuous: bullæ and teeth rather large.

Remarks.—This species is so distinct that close comparison with others is unnecessary. The skull may be told at a glance by the very short nasals and relatively long premaxillæ in connection with the size and shape of the interparietal.

Measurements.—Type specimen: total length 220; tail vertebræ 68; hind foot 30. Average of 2 males from type locality: total length 226; tail vertebræ 70.5; hind foot 31. An adult female from type locality: total length 211; tail vertebræ 61; hind foot 28.

Thomomys bridgeri sp. nov.

Type from Fort Bridger, Wyoming. No. $\frac{18858}{25509}$, ♂ ad., U. S. National Museum, Biological Survey Collection. May 27, 1890. Vernon Bailey. Original No. 1207.

Characters.—Rather large. Size and proportions as in *talpoides* but ears having a distinct point posteriorly: coloration dark (similar to *fuscus*, darker and redder than *talpoides*); differs from both *talpoides* and *fuscus* in having chin and openings of cheek pouches *black* instead of white.

Color.—Upperparts usually pale dull chestnut brown, sometimes almost buffy brown, and always well mixed with black hairs: underparts strongly washed with buffy fulvous: nose, earpatch, chin, and openings of cheek pouches dusky: feet whitish.

Cranial characters.—Skull rather large, with marked parallel temporal ridges, long rostrum and nasals (nasals deeply notched behind and squarish-spreading zygomata. Similar in general to *talpoides*, but rostrum and nasals much longer; nasals deeply notched behind; auditory tube strongly ossified and widely protruding. Compared with *T. uinta*, whose range it joins, it differs strikingly in the great length of the nasals, broadly spreading zygomata, smaller and differently shaped interparietal, much more strongly developed temporal ridges, and decidedly larger size.

Measurements.—Type specimen (♂ ad.): total length 237; tail vertebræ 71; hind foot 34. Average of 8 adults from type locality: total length 228; tail vertebræ 69; hind foot 31.5.

Thomomys clusius ocius sp. nov.

Type from Fort Bridger, Wyoming. No. $\frac{18852}{25586}$, ♂ ad., U. S. National Museum, Biological Survey Collection. May 24, 1890. Vernon Bailey. Original No. 1194.

Characters.—Similar to *clusius* but slightly smaller and much paler, the upperparts pale buffy; sides of nose and region around mouth dusky plumbeous; cheeks pale buffy gray; sides whitish, tinged with buffy; feet and underparts white.

Cranial characters.—Skull like that of *clusius* but zygomata less spreading; temporal ridges a little more strongly developed; interparietal larger; bullæ decidedly larger.

Measurements.—Type specimen: total length 204; tail vertebræ 60; hind foot 26. Average of 8 adults from type locality; total length 197; tail vertebræ 57; hind foot 25.

Thomomys idahoensis sp. nov.

Type from Birch Creek, Idaho. No. $\frac{23482}{30960}$, ♂ ad., U. S. National Museum, Biological Survey Collection. August 8, 1890. C. P. Streator. Original No. 129.

Characters.—Size small; coloration pale. Similar in general to *clusius* but much smaller and paler.

Color.—Upperparts grayish buff strongly washed with buffy fulvous, often with 'pepper and salt' appearance; underparts, tail, and feet buffy white.

Cranial characters.—Skull small and rather light, with enormous bullæ and narrow zygomata. In general like *clusius* but much smaller; *bullæ much larger and more swollen;* nasals long and rather slender, with straight sides.

Measurements.—Type specimen: total length 179; tail vertebræ 47; hind foot 23. Average of 10 specimens from type locality; total length 172; tail vertebræ 51; hind foot 22.5.

Thomomys desertorum sp. nov.

Type from Mud Spring, Detrital Valley, Arizona. No. $\frac{5387}{6082}$, ♂ ad., Merriam Collection. February 21, 1889. Vernon Bailey. Original No. 598.

Characters.—Size small; coloration buffy or golden fulvous, much as in *aureus*. Does not require comparison with any known species.

Color.—Upperparts (including tail) bright ochraceous, varying from buffy fulvous to bright orange fulvous; dark nose patch usually reaching up to between eyes and often to between ears; underparts varying from buffy to salmon fulvous; chin usually dusky; feet whitish; ear-patch dark.

Cranial characters.—Skull very small, much smaller than *fulvus;* zygomata strongly bowed outward—the anterior angle marked; interparietal subquadrate, broader than long; nasals notched at hinder end, not reaching near ends of premaxillæ; bullæ large and swollen.

Thomomys pygmæus sp. nov.

Type from Montpelier Creek, Idaho (alt. 6700 ft.). No. 55,271, ♂ ad., U. S. National Museum, Biological Survey Collection. July 29, 1893. Vernon Bailey. Original No. 4150.

Characters.—Size smallest of the known species; feet very small; color dark; skull sub-cylindrical.

Color.—Upperparts dark rufus brown; underparts buffy fulvous, the dark underfur showing through; nose dusky; feet whitish.

Cranial characters.—Skull similar in general to that of *idahoensis* but much smaller; braincase more cylindrical; interparietal larger and transversely oval; nasals short, rather broad and emarginate at posterior end; bullæ strikingly smaller; teeth large—relatively larger than in *idahoensis.*

Measurements.—Type specimen (♂ ad.): total length 177; tail vertebræ 46; hind foot 22. Another male from type locality: total length 165; tail vertebræ 40; hind foot 20.

Thomomys douglasi oregonus subsp. nov.

Type from Oregon City, Willamette Valley, Oregon. No. 56,939, ♂ ad., U. S. National Museum, Biological Survey Collection. October 24, 1893. C. P. Streator. Original No. 3340.

Characters.—Externally like *douglasi,* but usually lacking the white spot on breast.

Cranial characters.—Compared with *douglasi* the zygomata are larger and *much more broadly bowed outward* and rounded, the outer sides parallel instead of diverging anteriorly; nasals narrower posteriorly but sides straight as in *douglasi;* interparietal decidedly larger and longer antero-posteriorly, subtriangular instead of transversely oval, with posterior margin straight and not encroaching on supraoccipital; bullæ more swollen; pterygoid notch V-shaped instead of U-shaped.

Measurements.—Type specimen (♂ ad.): total length 220; tail vertebræ 70; hind foot 30. Average of 10 adults from type locality: total length 213; tail vertebræ 66.5; hind foot 29.

Thomomys limosus sp. nov.

Type from White Salmon, Gorge of the Columbia, Washington. No. 89,724, ♂ ad., U. S. National Museum, Biological Survey Collection. June 26, 1897. J. Alden Loring. Original No. 4382.

Characters.—Similar in size and proportions to *douglasi* but color much darker; cranial characters distinctive.

Color.—Upperparts dark umber brown; underparts dark slate, the tips more or less deeply washed with buffy or buffy fulvous; feet and tail whitish.

Cranial characters.—Compared with typical *douglasi* from Fort Vancouver, the zygomata are much more broadly bowed outward and less angular, the nasals slightly constricted behind anterior third and somewhat expanded and emarginate at posterior end, giving them a 'fish-tail' form; interpterygoid space V-shaped instead of U-shaped; angular process of under jaw decidedly larger and more spreading.

Measurements.—Type specimen: total length 224; tail vertebræ 68; hind foot 30. Average of 4 adults from type locality: total length 219; tail vertebræ 68; hind foot 29.

Thomomys hesperus sp. nov.

Type from Tillamook, Oregon. No. 69,825, ♀ ad., U. S. National Museum, Biological Survey Collection. November 9, 1894. J. E. McLellan. Original No. 1189.

Characters.—Size small; feet very small (hind foot with claws 24); tail short; ears small; color deep rufous.

Color.—Upperparts deep rufous; nose, earpatch, and ring round eye dusky; underparts varying from buffy fulvous to salmon fulvous; tail dark above, at least on basal half, whitish below and at tip all round; fore and hind feet whitish.

Cranial characters.—Skull small and light; interparietal large and broadly sub-triangular; bullæ small and rounded, short anteriorly; incisors narrow.

Remarks.—This species differs so markedly from its nearest allies that close comparison is unnecessary. From *T. melanops* Merriam from the Olympic Mountains, which appears to be its nearest relative, it differs in much smaller size, strikingly smaller feet and skull; very much narrower incisors; smaller, shorter, and more rounded bullæ; smaller and narrower basioccipital, much shorter rostrum and nasals, shorter tail, and more rufous coloration.

Measurements.—Type specimen (♀ ad.): total length 175; tail vertebræ 51; hind foot 24. Average of 3 females from type locality: total length 179; tail vertebræ 51.5; hind foot 24.

Thomomys niger sp. nov.

Type from Seaton, near mouth of Umpqua River, Oregon. No. 69,407, ♂ ad., U. S. National Museum, Biological Survey Collection. October 6, 1894. J. E. McLellan. Original No. 1147.

Characters.—Size medium; feet large; tail medium; ears short; head and body all round *glossy slate black* with greenish iridescence; nose duller, feet and tail white, sometimes irregularly blotched with dusky.

Cranial characters.—Skull of medium size, massive, showing well developed temporal ridges; interparietal oval or broadly subtriangular; zygomata moderately spreading and rounded; nasals emarginate, strongly and abruptly narrowed on posterior two-thirds.

Remarks.—In coloration the 6 specimens at hand from the type locality strikingly resemble *T. orizabæ* from southern Mexico. They differ from *orizabæ* in having less black on the feet and tail, and in marked cranial characters. The nearest relative of *T. niger* appears to be *T. douglasi* from the Columbia River. It differs from *douglasi*, apart from color, in slightly smaller size and in the following cranial characters: frontals narrower interorbitally; zygomata rounded instead of angular, their outer sides parallel instead of diverging anteriorly; nasals abruptly constricted between anterior and middle thirds and narrower posteriorly (instead of having straight sides); bullæ heavier anteriorly; molar series of same length as in *douglasi* but broader; incisors strikingly large and broad; underjaw deep, the angular process much more heavily developed.

Measurements.—Type specimen (♂ ad.): total length 225; tail vertebræ 81; hind foot 30. Average of 5 adults from type locality: total length 215; tail vertebræ 72; hind foot 30.

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PROCEEDINGS

OF THE

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DESCRIPTIONS OF FOUR NEW PECCARIES FROM MEXICO.

BY C. HART MERRIAM.

A preliminary study of the Mexican Peccaries in the collection of the Biological Survey of the U. S. Department of Agriculture, shows that the Collared Peccary (*Tayassu angulatus*) is separable into several strongly marked subspecies, that a very distinct dwarf species of the same group inhabits Cozumel Island off the coast of Yucatan, and that the large South American White-lipped Peccary (*albirostris** Illiger=*labiatus* Cuvier), not previously known from Mexico, is represented in the State of Campeche by a strongly marked subspecies of which four specimens were recently collected by E. W. Nelson and E. A. Goldman.

The American Peccaries comprise two very distinct superspecific or subgeneric types, which may be designated as (*a*) the

Sus albirostris Illiger (1815) antedates by two years *Dicotyles labiatus* Cuvier (1817) and is therefore, so far as known, the earliest specific name for the White-lipped Peccary. Illiger's original reference is as follows: "The two species of swine or peccaries peculiar to South America, the *Sus Tajassu* and the Tagnicati (*Sus albirostris*) distinguished for the first time by Azara, must form a special group within the genus. They have hardly any tail and only one claw on the hind feet" (p. 115).—Illiger, Abhand. K. Akad. Wiss. Berlin (1811), pp. 108, 115, 1815.

tajacu group, and (*b*) the *albirostris* group. In both groups the male is larger than the female and has larger teeth. In some forms the sexual disparity in size is small; in others it is great.

The Peccaries of the *tajacu* group inhabiting Mexico and the United States appear to break up into 6 forms, as follows:

Tayassu angulatus (Cope) Texas and northeastern Mexico.
angulatus sonoriensis (Mearns). Southern Arizona and Sonora.
angulatus humeralis nob. Colima to Tehuantepec.
angulatus crassus nob. Metlaltoyuca, Puebla (and Huehuetan, Chiapas).
angulatus yucatanensis nob. Yucatan.
nanus Merriam.* (A dwarf insular species) Cozumel Island.

In comparing skulls of the *tajacu-angulatus* series with those of the *albirostris* series, such striking and important differences appear that it seems necessary to recognize the two groups as constituting separate subgenera. Indeed J. E. Gray, in 1868, separated them as full genera, restricting Cuvier's generic name *Dicotyles* to *labiatus* (=*albirostris*) and adopting Fischer's name *Notophorus* for the Collared Peccary. (Proc. Zool. Soc. London, 1868, pp. 21, 43-45.)

But these names (*Dicotyles* and *Notophorus*, both proposed in 1817) are pure synonyms of *Tayassu* 1814, and cannot therefore be restricted to either of the two original species, both having been included by Fischer in the original diagnosis of his genus *Tayassu*. This leaves the *albirostris* group without a name. To supply the deficiency I propose to call it *Olidosus*.

Subgenus **Olidosus**† nob.

External characters.—Size large; setæ over posterior part of eyes very large and long, reaching back nearly to tip of ears; occiput and neck bearing a mane of long flat black bristles which in passing backward become greatly elongated (lose their points and become frayed at tips), spread out laterally overlying the short annulated bristles of sides of

*See *antea*, p. 102.

†Olidus, stinking; sus, hog.

back, and cover the entire rump, where, when old, they develop swollen whitish nodes or joints giving the rump a very curious appearance.*

Cranial characters.—Skull large, heavy, and massive; upper surface of rostrum and nasals broadly flattened or only slightly convex; nasals acute anteriorly, reaching almost as far forward as premaxillæ; zygomatic ridge rising abruptly to top of skull and disappearing anteriorly over 2d premolar; anterior opening of antorbital foramen situated over posterior root of 1st molar; *sides of rostrum broadly flattened* (swollen instead of excavated over premolars, and not divided into upper and lower parts by continuation of zygomatic ridge); *palate very broad and flat*, expanded instead of narrowed between canines and molars, and lacking the sharp ridge which in the *angulatus* group runs from 1st premolar to inner side of canine; angle of underjaw rounded below anteriorly.

Dental characters.—Teeth large and heavy, relatively broad anteriorly; 2d lower molar with posterior cusp nearly as large and high as anterior (thus differing widely from its condition in *angulatus*, in which the tooth is not only very much smaller, but the anterior cusp is high and slender, the posterior nearly obsolete); incisors and canines only slightly larger than in *angulatus;* molariform teeth much larger (relative increase in size greatest in 1st and 2d lower premolars.

Tayassu albirostris ringens subsp. nov.

Type from Apazote, near Yohaltun, Campeche. No. 108,279, ♀ ad., U. S. National Museum, Biological Survey Collection. January 1, 1901. E. W. Nelson and E. A. Goldman. Original No. 14,383.

Characters.—Size large (length nearly 4 feet); ears small; color nearly black; muzzle white; rump and median part of back clothed with exceedingly long and flexible flattened bristles, frayed at the ends, those on posterior part of back (when old) with terminal third or half marked by distinct joints or nodes (those on rump averaging three or four on each bristle). Similar in general characters to *albirostris*, from which it differs in the much greater extension of the whitish face markings, the white covering the muzzle completely from snout to midway between nose and eyes, and extending backward along sides of underjaw to below ears, and in the presence of an ill defined white band above hoofs of hind feet.

Color.—Upperparts black, on close inspection sparingly grizzled with fulvous, especially on sides of neck and shoulders; top of head from occiput to midway between eyes and nose black; muzzle chin and lips

*Under the microscope the nodes are found to mark points where the horny longitudinal fibers of the outer coat have begun to break and spread. Transverse sections at these points, made by my assistant Dr. S. D. Judd, show that complete disintegration of the interior radiating pith or core has taken place, and indicate that the nodes are confined to the dead terminal parts of the bristles.

pale yellowish white, the whitish color of chin extending back broadly on each side of underjaw to below ears, forming a very conspicuous broad V-shaped marking; underparts sparsely haired, black, grizzled with fulvous; legs and feet blackish, mixed with soiled white near hoofs; the whitish in hind feet forming an indistinct band above hoofs.

Cranial characters.—The skull of the type specimen, a fine adult female, compared with a skull of the same size from San Lorenzo, Rio Grande, Brazil, received through the courtesy of Professor Hermann von Ihering, presents the following differences: parietal shield narrower, elevated and strongly bulging upward over posterior part of braincase; nasals more acute anteriorly, the free end appearing longer; premaxillæ slightly longer; zygomata and posterior expansion of squamosals decidly broader; posterior part of palate quite different, the projection behind molars abruptly narrowed at post molar notch (behind on inner side of molar alveolus) and continuing backward with smooth parallel sides of essentially equal breadth throughout, while in *albirostris* it is much broader anteriorly and slopes irregularly backward; bullæ smaller and ending below in an elongated papilla pointing toward hamular process; basi-occipital considerably narrower between bullæ posteriorly.

Measurements.—Type specimen (♀ ad.): total length in dry skin 1180; hind foot in flesh 229. *Skull:* basal length 212; basilar length of Hensel 231; occipitonasal length 270; zygomatic breadth 112; greatest breadth across squamosals posteriorly 106; palatal length 181; breadth of posterior extension of palate midway between molars and hamulars 16; breadth of basioccipital between bullæ posteriorly 20; length of upper molariform series 78.

Subgenus **Tayassu** Fischer.

(Here restricted to the *tajacu-angulatus* group).

Tayassu angulatus humeralis subsp. nov.

Type from Armeria, Colima. No. 45,243, ♀ ad., U. S. National Museum, Biological Survey Collection. February 26, 1892. E. W. Nelson and E. A. Goldman. Original No. 1945.

Characters.—Similar to *angulatus* but sides grayer; head yellower; dorsal black band more strongly marked, almost as sharply as in *sonoriensis* from Arizona; shoulder stripes yellowish ochraceous, broad and conspicuous, as strongly marked as in *yucatanensis* but yellowish fulvous instead of white. Skull of male similar to that of male *angulatus;* skull of female decidedly larger with longer tooth row. In skulls young enough to show the sutures the nasal bones are strongly convex posteriorly, long and slender, and only slightly broader between maxillæ than between premaxillæ (differing markedly from their condition in *angulatus,* in which they are very much broader between the maxillæ); and the ascending or nasal arm of premaxilla is decidedly longer than in *angulatus.*

Remarks.—Compared with *sonoriensis* of Arizona the sides are less gray, the dorsal band less sharply defined, the shoulder stripes yellower and much more strongly marked. The sexual disparity in size is greater than in *sonoriensis*, the female being considerably larger than the male.

Measurements.—Type (♀ ad.): total length 960; tail 60; hind foot 215. *Skull:* basal length 203; occipitonasal length 224; zygomatic breadth 108; greatest breadth across squamosals posteriorly 99; palatal length 151; length of upper molariform series 67.

Tayassu angulatus yucatanensis subsp. nov.

Type from Tunkas, Yucatan. No. 198,282, ♂ yg-ad., U. S. National Museum, Biological Survey Collection. February 12, 1901. E. W. Nelson and E. A. Goldman. Original No. 14,534.

Characters.—Sexes nearly alike, the female not noticeably larger than the male. Size and general characters much as in *angulatus* but sides decidedly whiter; shoulder stripes broader, much more conspicuous, and somewhat subtriangular, broadest where they abut against the median dorsal black band which is well developed; (shoulder stripes broadest and most striking in young;) pelage coarser and scantier, the individual bristles decidedly larger and fewer in number; no black on nose or underlip. Skull similar to that of *angulatus* but nasals acute and rather short anteriorly, exposing more than usual of the floor of the anterior nares (upper surface of premaxillæ); posterolateral upward extension of squamosal (above and in front of auditory meatus) decidedly shorter than in *angulatus*, molariform teeth smaller and narrower—particularly the lower molars; in skulls young enough to show the sutures the nasals are short and very narrow between premaxillæ and expanded in the middle—very different from either *angulatus* or *humeralis;* they are more like those of *nanus*, but more contracted anteriorly.

Remarks.—Specimens from Tunkas and Chichen Itza in the arid peninsula of Yucatan are typical of this form, but specimens from the humid east coast strip are by no means typical and appear to represent a tropical form which here reaches its northern limit. Thus an adult male from LaVega (No. 108,514*) is larger and has coarser pelage than those from the arid interior, and differs considerably in color, the light rings on the bristles being yellowish fulvous instead of white, and the underlip blackish.

Measurements.—Type (♂ yg-ad.): total length 880; tail 36; hind foot 183. Average of 2 males from type locality: total length 887; tail 36; hind foot 182.5. Average of 3 females from type locality: total length 896; tail 36; hind foot 184.

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*The measurements of this specimen are: total length 945; tail 34; hind foot 202.

Tayassu angulatus crassus subsp. nov.

Type from Metlaltoyuca, Puebla. No. 92,960, ♂ yg-ad., U. S. National Museum, Biological Survey Collection. February 1, 1898. E. W. Nelson and E. A. Goldman. Original No. 12,127.

Characters.—Similar in general to *angulatus* but larger; pelage very much coarser, the individual bristles exceedingly large and rigid; black dorsal stripe illdefined or obsolete; general color grizzled gray, much paler than *angulatus;* hind legs grizzled black and fulvous; skull longer; molariform teeth narrower; anterior opening of antorbital foramen between 2d and 3d premolars (instead of between 3d premolar and 1st molar as in *angulatus*). Front of underjaw (seen from below) narrower, flatter, and less swollen in front of forks of rami. Crown of 1st upper premolar narrower and more slender; crown of last lower molar longer and narrower.

Remarks.—Only two specimens from the type locality, both young adult males, are in the collection. The skulls resemble two from Huehuetan, Chiapas, of which both sexes are at hand. In the Huehuetan animal the skull of the female is decidedly larger than the male—being longer, and broader across the rostrum. The skins are quite different, those from Huehuetan being darker, the black dorsal stripe present anteriorly (from occiput to shoulders); rump and hind legs blacker; nose blackish; light rings on bristles on anterior part of body (particularly on head) ochraceous or yellowish fulvous instead of whitish, giving a very different color to the head; bristles larger—largest of all.

Measurements.—Type (♂ yg-ad.): total length 950; tail 54; hind foot 203.

VOL. XIV, PP. 125-126 JULY 19, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

TWO NEW RODENTS FROM NORTHWESTERN CALIFORNIA.

BY C. HART MERRIAM.

Phenacomys albipes sp. nov.

Type from Redwoods, near Arcata, Humboldt Bay, California. No. 97,236, ♂ ad., U. S. National Museum, Biological Survey Collection. May 24, 1899. Walter K. Fisher. Original No. 821.

Characters.—Appearance Microtus-like: size rather large; tail long, sharply bicolor, and scantily haired. Color grizzled brown; fore and hind feet white.

Color.—Upperparts grizzled bister with brownish wash on head, shoulders, and sides; sides of nose dark grayish; underparts grayish plumbeous with buffy wash; fore and hind feet white; ankles dusky; tail dusky above and broadly whitish below, with sharp line of demarcation.

Cranial characters.—Skull long and rather slender; braincase long; interparietal large and broad, zygomata not spreading, the anterior roots sloping strongly backward, the jugals slightly expanded and nearly parallel; nasals broadly wedge-shaped, truncate posteriorly in front of premaxillæ, incisive foramina rather short and broad; bullæ large; interpterygoid fossa long, squarely truncate anteriorly against a broad median azygos projection of the palate.

Remarks.—The only species with which *P. albipes* requires comparison is *P. longicaudus* True from western Oregon—one of the rarest and least known mammals of the world. So far as I am aware only two specimens of *longicaudus* have been collected—the type and a female in the Biological Survey Collection, from Meadows, Lane County, Oregon.

Both were obtained by Aurelius Todd. The type specimen is a woolly fulvous animal with a large hairy blackish tail and dark fore and hind feet. The other specimen is pale buffy fulvous and seems to be a partial albino. Compared with the type of *P. longicaudus*, *P. albipes* differs strikingly, the body being coarsely grizzled brownish bister, like an ordinary field mouse (*Microtus*), instead of fulvous, the feet white instead of dark brown, the tail slender, scantily haired, and white underneath, instead of large, hairy and blackish all round.

The skull of the type of *longicaudus* is reduced to fragments but the parts that remain agree essentially with corresponding parts of the skull from Meadows, Lane County, Oregon (No. 42,621 ♀). Compared with the latter the skull of *albipes* differs markedly in greater length and narrowness, less spreading zygomata, narrower and longer braincase, longer rostrum and nasals, larger bullæ, and longer interpterygoid fossa, which is square anteriorly instead of rounded or angular.

Measurements.—Type specimen (♂ ad.): total length 168; tail vertebræ 62; hind foot 19.

Callospermophilus chrysodeirus trinitatis subsp. nov.

Type from Trinity Mountains east of Hoopa Valley, California (altitude 5700 feet). No. 95,531, ♀ ad. U. S. National Museum, Biological Survey Collection. September 10, 1898. Vernon Bailey. Original No. 6693.

Characters.—Size large; ground color dark; under side of tail dark chestnut. In fall pelage similar to *chrysodeirus*, but larger; ground color darker; inside of tail dark chestnut (instead of golden fulvous); skull and teeth larger; nasals longer.

Remarks.—This spermophile, which is common in the Siskiyou, Salmon, and Trinity Mountains of northwestern California and southwestern Oregon, is much larger and darker than *chrysodeirus*, and never, so far as known, develops the golden mantle which covers the head and shoulders of that species. In size it equals *saturatus* of the Cascade Range in the State of Washington, but differs widely from that species in having the inner black stripe strongly developed (as in *chrysodeirus*), and the under side of the tail solid chestnut instead of grizzled fulvous.

Measurements.—Type specimen (♀ ad.): total length 290; tail vertebræ 105; hind foot 44. Average of 6 specimens from type locality: total length 283; tail vertebræ 100; hind foot 43.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

DESCRIPTIONS OF THREE NEW KANGAROO MICE OF THE GENUS *MICRODIPODOPS*.

BY C. HART MERRIAM.

Since the discovery of the genus *Microdipodops** in East Humboldt Valley, Nevada, in 1891, by Vernon Bailey, the explorations of the U. S. Biological Survey in adjacent territory have resulted in not only extending the range of the original species (*megacephalus*) but also in the discovery of three additional forms, two of which appear to merit full specific rank. These are here described.

Microdipodops megacephalus oregonus subsp. nov.

Type from Lake Alvord, Alvord Desert, eastern Oregon. No. 80,128, ♂ yg-ad., U. S. National Museum, Biological Survey Collection. August 18, 1896. C. P. Streator. Original No. 5430.

Characters.—Similar to *megacephalus* but tail longer; pelage less fluffy, upperparts more olivaceous and less conspicuously lined with black-tipped hairs; underparts white—buffy wash less marked; a whitish streak usually present along under side of tail; skull smaller.

Measurements.—Type specimen (♂ yg-ad.): total length 153; tail vertebræ 88; hind foot 24.

Microdipodops pallidus sp. nov.

Type from 10 miles east of Stillwater, near Sink of the Humboldt and Carson, Churchill County, Nevada. No. 93,520. ♀ ad., U. S. National

Museum, Biological Survey Collection. May 11, 1898. H. C. Oberholser. Original No. 101.

Characters.—Size slightly larger than *megacephalus;* pelage long, soft, lax and fluffy; *tail decidedly longer and without dark tip;* body much paler.

Color.—Upperparts pale buffy fulvous, finely and inconspicuously lined with dark-tipped hairs; underparts, including sides of nose, lower sides of face, legs, feet, and underside of tail white; upperside of tail buffy throughout without dark tip.

Cranial characters.—Skull essentially as in *megacephalus.*

Measurements.—Type specimen (♀ ad.): total length 171; tail vertebræ 102; hind foot 25.5.

Microdipodops californicus sp. nov.

Type from Sierra Valley, near Vinton, Plumas County, California. No. 101,227, ♂ yg-ad., U. S. National Museum, Biological Survey Collection. August 7, 1900. Walter K. Fisher. Original No. 1596.

Characters.—Size of *megacephalus;* tail and hind foot longer; pelage more compact and less fluffy than in the other species; color olivaceous *underparts and head markings snow white.*

Color.—Upperparts olivaceous, finely and inconspicuously lined with dark-tipped hairs; underparts, feet, sides of nose, spot over eye, patch behind ear, and mark on upper and lower folds of ear, snow white; tail above pale buffy fulvous becoming blackish toward tip; below white throughout; side of face below body-color, and outer side of foreleg, washed with pale buffy fulvous.

Cranial characters.—Skull as a whole similar to that of *megacephalus* but decidedly smaller, due chiefly to smaller size of audital capsules, the skull proper being about the same size; notch between bulging bullæ posteriorly broader; nasals decidedly more slender.

Measurements.—Type specimen (♂ yg-ad.): total length 158; tail vertebræ 91; hind foot 25. Average of 10 from type locality: total length 160; tail vertebræ 92; hind foot 25.

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*North America Fauna No. 5, pp. 115-117, August, 1891.

Vol. XIV, pp. 129-130 August 9, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW SPECIES OF GALICTIS FROM MEXICO.

BY E. W. NELSON.

Galictis canaster new species. Yucatan Grison.

Distribution.—Known only from Tunkas, northern Yucatan, Mexico.

Specific characters.—Face and entire underparts including feet and legs black; black area of face limited posteriorly by a well defined pure white stripe extending across forehead above eyes and reaching back across each cheek, covering front of ears, and thence along sides of neck becoming obsolete near shoulders; rest of upper side of head shading gradually back from the pure white stripe into the general smoky gray of upperparts, including tail; underfur on upperparts light gray; long hairs same color at base with broad subterminal black bands and white tips. The black bands on the long hairs produce the effect of a thin dark wash over the pale under color.

Size and proportions.—Total length (estimated) between 650 and 700 millimeters. A powerfully built, short legged, heavy bodied animal with short round ears like *Galictis vittata*, but exceeding it in size.

Remarks.—The species described above is closely related to *Galictis vittata*, agreeing with it generally in proportions and in the characteristic pattern of coloration. The most striking difference between the two animals is in the color of the upperparts. The hairs on the back of *Galictis vittata* from Guiana and Brazil are described as being dark brown or yellowish gray with white or yellowish tips. *Galictis canaster* has the underfur and basal half of the long hairs of the back light gray, the long hairs have broad subterminal bands of black and small white tips.

The northermost references I have been able to find for *Galictis vittata* (the only species commonly recognized in the restricted genus *Galictis*)

are Guiana and northern Brazil. The capture of a member of the group in Yucatan adds greatly to its known range and no doubt indicates that it is represented, although hitherto overlooked, in much of the intervening region.

The interesting animal upon which the present description is based was captured alive by the Indians near Tunkas, Yucatan, and sent to General Canton, Governor of the State. While in Merida, Yucatan, I heard of a strange animal in the Governor's possession and upon making known my desire to see it was courteously invited to visit his house for the purpose. There I found the animal living in a cage and made the accompanying description of its size and color. Later, while working at Tunkas, the Indians told me of its capture and said it was extremely rare. They called it '*El Rey de las Ardillas*,' or king of the squirrels, but it appeared to have been previously unknown to nearly everyone with whom I talked.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

DESCRIPTIONS OF TWO NEW SQUIRRELS FROM MEXICO.

BY E. W. NELSON.

Sciurus yucatanensis baliolus* new subspecies. Campeche Squirrel.

Type No. 107,939. ♂ ad., U. S. National Museum, Biological Survey Collection, from Apazote, Campeche, Mexico, collected January 8, 1901, by E. A. Goldman.

Distribution.—Southern Campeche and eastern Tabasco (north of the Usumacinta River) Mexico.

Subspecific characters.—Differs from typical *Sciurus yucatanensis* from northern Yucatan in much darker color above and below. Upperparts dark blackish gray with a dull buffy suffusion; outside of fore feet and legs black, finely grizzled with dull buffy or gray; top of hind feet black; underparts dark iron gray; tail black thinly washed with gray.

Skull.—Practically same as in typical form.

Dimensions of type.—Total length 464; tail vertebræ 238; hind foot 59.

Remarks.—Typical *S. yucatanensis* lives in the arid region of northern Yucatan and Campeche while the present subspecies inhabits the much more humid forests of southern Campeche and adjacent border of Tabasco and will doubtless be found also in southern Yucatan where similar climatic conditions prevail.

Sciurus deppei vivax† new subspecies. Zapote Squirrel.

Type No. 107,932, ♀ ad., U. S. National Museum, Biological Survey Collection, from Apazote, Campeche, Mexico. Collected January 8, 1901, by E. A. Goldman.

*Baliolus=dark, swarthy.

†Vivax=lively.

Distribution.—Lowland forests of eastern Tabasco, southern Campeche, and southern and eastern Yucatan.

Subspecific characters.—General style of coloration similar to typical *Sciurus deppei* from northern Vera Cruz, but much paler, more rusty reddish on upperparts; outside of forelegs and feet clear gray, same color extending up as a well defined wash on side of shoulders; tops of hind feet like back but edged and sometimes washed with clear gray; top of tail more heavily washed with white; underparts white or grayish white distinctly clearer than in true *S. deppei* with no trace of buffy suffusion.

Skull.—Nearly typical but with rather heavier rostrum, broader nasals; smaller and rounder audital bullæ.

Dimensions of type (measured in the flesh.—Total length 373; tail vertebræ 168; hind foot 52.

Remarks.—The occurrence of a form of *Sciurus deppei* in the lowland forests of Campeche and Yucatan was quite unexpected. The new form lives in a drier climate than true *S. deppei* and this is well indicated by its clearer, more vivid, colors.

VOL. XIV, PP. 133-134 AUGUST 9, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

THE EARLIEST GENERIC NAME OF THE NORTHERN FUR SEAL.

BY T. S. PALMER.

Nine years ago I proposed *Callotaria** as a substitute for *Callorhinus* Gray, 1859, on the ground that the latter name was preoccupied by *Callirhinus* Blanchard, 1850, a genus of Coleoptera. Further investigation shows that *Callorhinus* was not, as commonly supposed, the first generic name applied to the northern fur seal, but that it was antedated more than forty years by *Otoes* G. Fischer. The latter name appeared in 1817† in a publication which is not generally accessible, and the description of this genus is therefore reproduced in full below:

Otoes, Fisch. ab ὠτώεις, auritus. Otaries Peron. Les phoques a oreilles. Cuv. Regne an. I, p. 166.

Incisivi quatuor utrinque biacuminati, superiores exteriores simplices et minores, inferiores furcati, molares conici. Auriculae distinctae.

Phoca jubata, ursina, Lin. Gmel.

Reference to the Règne Animal which also appeared in 1817, the same year in which this description was published, shows that Cuvier recognized a group of eared seals under the designation 'Les Phoques a oreilles extérieures', which he suggested

*Proc. Biol. Soc. Washington, VII, p. 156, July 27, 1892.

†Mem. Imp. Soc. Nat. de Moscou, V, p. 445, 1817.

might prove to be generically distinct. In this group he placed *Phoca jubata* Gmelin and *P. ursina* Gmelin. *Phoca jubata* Gmelin is a composite species based in part on a southern fur seal and in part on the northern sea lion, *Leo marinus* of Steller = *Eumetopias stelleri* of recent authors. The name had been, however, previously applied by Forster, in 1775, and is now generally restricted to the southern fur seal. *Phoca ursina* Gmelin (= *P. ursina* Linn.), is the northern fur seal of Bering Sea and, as the only identifiable species in the group, may be considered the type of *Otoes*.

It may be objected that Fischer did not name the northern fur seal, but merely applied a generic name to the eared seals in general or renamed *Otaria* of Péron. This, however, was not the case. Péron's *Otaria* had appeared only the year previous, and there is no evidence that Fischer had ever seen the description. What he did was simply to apply a generic name to Cuvier's group which, as shown above, was based chiefly on the northern and not on the southern fur seal.

Three different generic names are now applied to the northern fur seal: *Callotaria*, *Callorhinus* and *Arctocephalus**. The general adoption of *Otoes* would obviate this confusion, and the species thus far described would stand *Otoes ursinus* (Linnæus), *Otoes alascanus* (Jordan & Clark), and *Otoes curilensis* (Jordan & Clark).

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*W. L. Sclater, Mammals of South Africa, I, p. 118, 1900, gives the type of *Arctocephalus* Cuvier, 1826, as *Phoca ursina*.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW POCKETMOUSE FROM SOUTHERN CALIFORNIA.

BY EDGAR A. MEARNS.

The form of *Perognathus fallax* inhabiting the eastern or desert slopes of the mountains of Riverside and San Diego counties, California, and thence southward along the eastern slope of the Coast Range into Lower California, is almost as pallid as the pocketmouse of the Colorado Desert which Mr. Osgood named *Perognathus penicillatus angustirostris*. The name *fallax*, in a subspecific sense is here restricted to the animal of the coastal region, although the type and series of topotypes, from Reche Canyon, three miles southeast of Colton, San Bernardino County, California, are almost exactly intermediate between it and the desert race. The darkest individuals examined are from Rose Canyon and San Pasqual Valley, on the western border of San Diego County.

Perognathus fallax pallidus subsp. nov.

PALLID POCKETMOUSE.

Type.—No. 61,007, United States National Museum. Skin and skull of adult female, from Mountain Spring, half-way up the east slope of the Coast Range Mountains, on the Mexican Boundary Line, in San Diego County, California. Collected May 16, 1894, by Edgar A. Mearns. Original No. 3520.

Subspecific characters.—Size and cranial characters exactly like those of *Perognathus fallax fallax*. Pelage light gray (No. 9 of Ridgway's color manual) at base instead of dark gray (No. 6, Ridgway), and the general effect pale broccoli-brown instead of bistre above, where it is much more lightly mixed with black than in *fallax;* tail-stripe drab instead of hair-brown; lateral line and subterminal zone of hairs of upperparts pale pinkish buff; feet and underparts creamy white; ears with a few white hairs anteriorly. Young, pale smoke-gray above.

Measurements.—Average of six adult females from the east slope and notch at summit of Coast Range Mountains, near the Mexican boundary (Mountain Spring to Jacumba): length, 195 mm. (188–206); caudal vertebræ, 107 (98–112); hind foot, 24.2 (23.7–25); ear from crown, 6.9 (6.5–7).

Distribution.—Specimens have been examined from San Jacinto Lake, Riverside County, California; San Felipe Canyon, Mountain Spring, wagon-pass at summit of Coast Range, and Jacumba Hot Springs, in San Diego County, California and Lower California.

Acknowledgments.—I am indebted to the authorities of the United States National Museum and the Biological Survey of the Department of Agriculture for the use of the required materials, and to Mr. Wilfred H. Osgood for assistance in studying the group.

VOL. XIV, PP. 137-143 AUGUST 9, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

THE AMERICAN JAGUARS.

BY EDGAR A. MEARNS.

The jaguars of South America are readily distinguishable from the forms to the northward by cranial and dental characters, as shown beyond.

The materials from South America in the collection of the United States National Museum, including those of the Biological Survey of the United States Department of Agriculture, aggregating ten skulls and one mounted specimen, are insufficient for elucidating the southern forms which, collectively, represent the '*Felis onca* Linnæus' of modern authors. Considerable variation is observed in the skulls of eight males from Brazil, Paraguay, Bolivia, and Parana. The largest of these (No. 4128, U. S. National Museum) is from Paraguay, and measures 242 mm. in basilar length (Hensel). The audital bullæ are much flattened, with the space between them and the mastoid and paroccipital processes completely filled. The teeth give the following measurements: crown of upper carnassial, 29 by 15.6 mm.; crown of middle upper premolar, 20.3 by 11; length of upper canine, from gums, 43; length of incisor series, measured on alveoli, 35. Compared with the above specimen, the skull of No. 4361, also collected by Captain T. J. Page, U. S. N., at San Jose, Parana, measures only 212 mm. in basilar length, but has relatively heavy dentition, the

crown of upper carnassial measuring 31 by 16; crown of middle upper premolar, 20 by 13; length of upper canine from gums (tooth worn), 37; length of incisor toothrow, 33.5. The audital bullæ are greatly flattened, the space between bulla and paroccipital filled, but that between it and mastoid not completely so. Brazilian skulls are somewhat smaller than those from Parana, Paraguay, and Bolivia, and have smaller teeth, less flattened audital bullæ; and in some there is a sulcus between the bulla and the mastoid process.

The juguars of South America may be distinguished from those of Central America and Mexico as follows:

South American Jaguars.	*Mexican and Central American Jaguars.*
Postpalatal fossa, in adult male, more than 23 mm. wide.	Postpalatal fossa less than 23 mm. wide.
Audital bulla flattened, with space between it and paroccipital and mastoid processes filled up.	Audital bulla inflated, with deep fossæ between it and the mastoid and paroccipital processes.
Length of second and third premolars, taken together, more than 45 mm.	Length of second and third premolars, taken together, less than 45 mm.
Maximum diameters of male skull, 300 by 200 mm.	Maximum diameters of male skull, 280 by 180 mm.

The remaining forms, from north of South America, of which I have examined six skins and thirteen skulls, may be identified by means of the following key:

Skin with a rosette pattern, in black, extending from neck to hips and from vertebral line to belly. Outer surface of ear, all black. Skull of male less than 215 mm. in basal length. Inhabits Central America, from Honduras to Panama ..... *Felis centralis.*

Skin with distinct rosettes only on middle dorsal area; elsewhere they are disorganized into isolated black spots. Outer surface of ear with a tawny central spot. Skull of male more than 215 mm. in basal length. Distributed throughout the lowlands of Mexico and the adjacent border of the United States.

Coloration pallid, ground color ochraceous buff, black spots small. Inhabits the Arid Tropical areas of Mexico, north to the United States..... ...*Felis hernandesii.*

Coloration intense, ground color tawny ochraceous, black markings much larger. Inhabits Humid Tropical areas of Mexico, (north to Texas ?) .....
.... *Felis hernandesii goldmani.*

Felis centralis sp. nov.

CENTRAL AMERICAN JAGUAR.

Type.—Skull No. 14,177, adult male, from Talamanca, Costa Rica, collected by Professor William M. Gabb. (The skin, No. 12,177, U. S. National Museum, seems to have been destroyed.)

Characters.—Smallest of the Jaguars. Length of adult male, 1800 mm. Basal length of male skull, 200 to 212. Dentition weak, upper premolar series measuring, on alveoli, 49 to 53.5. Coloration intense; upper surface of body with a median chain of black spots, bordered by five rows of black-bordered rosettes, on a ground of clay color; outer surface of ear, black, excepting a few tawny hairs; chest and belly heavily blotched with black.

Color.—Skin No. 61,192, U. S. National Museum collection, from Costa Rica, received from the Costa Rican Commission, World's Columbian Exposition, has the upperparts with a median chain of black spots, bordered on each side by about five longitudinal rows of black rosettes occupying the back and sides, on a ground of clay color. The median dorsal area consists of a chain of confused double spots tending to coalesce anteriorly and appearing as distinct, oval, paired blotches posteriorly. The lateral rows of rosettes, which vary from 50 to 100 millimeters in diameter, increase in size from the vertebral line to the belly, enclosing light areas of correspondingly increasing size, clay color slightly tinged with tawny, and containing from one to five small, rounded, black spots. The upper side of neck, and crown, have the ground color slightly suffused with tawny, the former having a modification of the rosette pattern of the black spotting of the back, the latter being rather uniformly covered with rounded black spots, from five to fifteen millimeters in diameter, smallest anteriorly, extending from opposite the anterior border of the eyes to opposite the posterior border of the ears. Muzzle, clay color, finely and evenly sprinkled with black hairs, leaving a plain, pale buffy crescent bordering the median upper margin of the nasal pad. A large black spot borders the upper, and another the lower lip. Ears, solid black on outer surface, excepting a a few tawny hairs in middle; inner surface clay color, edged with tawny on anterior margin. Bristles of upper lips and above eyes, mixed black and white. Eyelashes and a few long hairs on sides of base of nose, black. Outer surface of limbs, clay color, coarsely blotched with black, the spots decreasing in size and becoming more rounded from the body

to the toes, those of the arms and thighs measuring 30 to 60 millimeters in diameter. Claws, horn color. Tail spotted and banded with black, the intervening areas being clay color or somewhat hoary nearest the tip, which is broadly black. The upper side of tail has more black than light, the under side having the black and clay-colored areas about equal in amount. In the median line, above, each light ring has a black spot, and the last pale rings are mixed with black hairs. There are three subterminal bands of solid black above, the more proximal ones being interrupted. On the under side of tail the pattern is confused and the light areas whitish. Underparts buffy white, heavily blotched with black. Under side of body with a median chain of small black spots, and two rows of somewhat quadrate black blotches on either side, the spots averaging about fifty millimeters in diameter. On the under side of neck and head, the black spots, which are much smaller than those on the chest and abdomen, tend to form transverse chains, while those of the cheeks and muzzle are arranged in longitudinal series.

The flat skin of a jaguar taken about 100 miles up the Segovia River, which forms the boundary between Nicaragua and Honduras, killed by Mr. Charles H. Townsend of the United States Fish Commission, closely resembles the specimen from Costa Rica just described, differing in being slightly more intense in coloring, the vertebral spots coalescing so that an interrupted median dorsal stripe is formed: and some spots in the lateral rows are filled with black, others having the rosettes elongated and resembling the outline of the animal's hind foot, small black spots suggesting the pads or tubercles. In general, the two may be considered to be identical.

Skull and teeth.—Skull high, narrow interorbitally, with small, pointed audital bullæ. Dentition weaker than in the remaining forms (see measurements).

Measurements.—Following are measurements taken from the skin of an adult male, No. 61,192, U. S. National Museum Collection: length, 1800 mm.; tail, 575; hind foot, 220; ear from crown, 60; chord of longest hind claw, 23; fore claw, 26. The flat skin described above, from Honduras, has the end of the tail gone; its head and body measure 1175 mm. in length. Measurements of skulls of two adult males (Nos. 14,177 and 14,176, both from Talamanca, Costa Rica, collected by Professor W. M. Gabb): basilar length, 200, 212; zygomatic breadth, 169, 175; mastoid breadth, 102, 105; distance between orbits, 42.5, 45; between tips of postorbital processes, 68, 70.5; postorbital constriction, 41.5, 43; length of nasals, on median line, 59, 66; greatest breadth of nasals, 38, 43; distance from foramen magnum to hinder margin of palate, 103, 108; from posterior margin of palate to middle incisor tooth, 98, 106; length of interpterygoid fossa from base of hamular process, 33, 37; distance between upper carnassials, 52.5; 56; distance between upper canines, 32, 36.5; greatest length of mandible, 167, 180; greatest height of mandible, 81, 84; length of upper incisor series, measured on alveoli, 29, 32; distance across upper canines, measured on alveoli, outside, 65, 69; length of upper lateral toothrow, 75, 82.5; length of upper premolar

series, measured on alveoli, 49, 53.5; crown of upper carnassial tooth, 25.3 by 13.7, 26.5 by 13.9; crown of middle upper premolar, 17.5 by 9, 18 by 9.

Felis hernandesii (Gray).

MAZATLAN JAGUAR.

Leopardus hernandesii Gray, Proc. Zool. Soc. London, 1857, p. 278, Mamm. pl. LVIII (colored). Type from Mazatlan, State of Sinaloa, Mexico.

Felis onca Alston, Biologia Centrali-Americana, Mammalia, 1879-'82, p. 58. (Part.)

Characters.—Size larger than *Felis centralis*, smaller than *F. onca*. Coloration pale, with black markings greatly reduced in size, on a ground color of ochraceous buff, the black-bordered rosettes being confined to the upper portion of the middle dorsal region and elsewhere broken up into isolated spots.

Color.—Ground color ochraceous buff. The pattern of the black markings is quite different from *Felis onca* and *F. centralis*, as pointed out by Doctor J. E. Gray (P. Z. S., 1857, p. 278) and shown in his excellent colored figure, taken from the living animal. He states that "instead of the spots being all placed in rings or roses, as they are usually called, the spots on the front part of the body are single and scattered, and those on the hinder part of the body are alone placed in rings or roses." Later (P. Z. S., April 11, 1867, p. 402), Gray continues: "The specimen which I described under the name of *Leopardus hernandesii* * * * has come into the British Museum collection; and I cannot find any difference in the skull to distinguish it from the other specimens of the Jaguar; so I suppose it must be considered one of the varieties of that species, marked by the distance at which the small spots are placed from each other, only now and then forming anything like a distinct ring or row of spots." The skin described below, lent me by Doctor A. K. Fisher, is essentially a topotype, collected at Cacalotlan (near Mazatlan), in the State of Sinaloa, Mexico, by Mr. Edward W. Nelson. In this specimen, the chain of black markings along the vertebral line is disorganized anteriorly, and consists of paired round or elliptical spots, more or less fused and irregular on the posterior half of body, and traceable to the middle of the tail as a dorsal series of narrowly-elongate, black spots; it appears as a narrow, interrupted line on the crown and neck. The rosettes are restricted to the region behind the shoulders, and, even there, are mostly broken up into scattered spots; and they do not tend to completely encircle light areas, which latter seldom contain black spots. The rosettes become vague after the first two or three rows, disappearing in a succession of scattered spots upon the sides so that it is impossible to count the number of rows, as is easily done in *Felis onca* and *F. centralis*, though the number of rows suggested by the scattered spots is obviously greater than in those

species. The black spotting extends over the outer surface of the limbs. The whole top and sides of the head, excepting the muzzle above, are quite evenly covered with rounded black spots, measuring 5 to 10 mm. in diameter, those on sides of muzzle forming longitudinal rows; upper side of muzzle ochraceous buff finely mixed with black hairs. Ears clothed inside with buffy-white hairs; outer surface black, with a large tawny spot occupying the middle portion. Tail ochraceous buff above, grayish white below, longitudinally striped with black on proximal three-fifths, and transversely banded with black on terminal two-fifths, the last three or four light rings being grayish. Underparts buffy white, rather lightly banded with elongate (not quadrate) black spots.

Skull and teeth.— The collection of the United States National Museum contains but two skulls of *Felis hernandesii hernandesii*, both females of which measurements are given below.

Measurements.—The flat skin described above is 1990 mm. in total length; tail, 650. Measurements of two skulls of adult females (No. 6480, U. S. National Museum, from near Colima, Mexico, and No. 88,044, U. S. Nat. Mus., Biological Survey Collection, from San Blas, Mexico): basilar length, 181, —; zygomatic breadth, 156, 159; mastoid breadth, 95, —; interorbital breadth, 45, 46; distance between tips of postorbital processes, 72, 70; postorbital breadth, 45, 50; length of nasals on median line, 53, 55; greatest breadth of nasals, 36, 37; from foramen magnum to hinder margin of palate, 90, —; from posterior margin of palate to middle incisor tooth, 91, 87; length of postnarial fossa from base of hamular process, 26, 28; distance between upper carnassials, 53, 54; distance between upper canines, 31, 34; greatest length of mandible, 150, 154; greatest height of mandible, 67, 72; length of upper incisor toothrow, measured on alveoli, 29.5, 28.5; distance across upper canines, 63, 61; length of upper lateral toothrow, 71, 72; length of premolar series, measured on alveoli, 49, 48; crown of upper carnassial, 25.8 by 13, 24 by 13; crown of middle upper premolar, 16.2 by 8.4, 16.2 by 8.2.

Felis hernandesii goldmani subsp. nov.

CAMPECHE JAGUAR.

Type.—Skin No. 105,930, U. S. National Museum Collection, taken at Yohatlan, Campeche, Mexico, January 5, 1901, by Mr. Edward A. Goldman of the Biological Survey, United States Department of Agriculture.

Characters.—Pattern of coloration as in typical *Felis hernandesii*, but color much more intense; black markings greatly increased in size; ground color tawny ochraceous; tail largely black above.

Color.—Upperparts tawny ochraceous, heavily spotted with black. In the type specimen, the dark vertebral area is composed of a chain or double row of black spots, separate and elongate on the neck, rounded and more or less joined together opposite shoulders and on rump, and forming a practically complete dorsal stripe on middle of back. The rosettes, which are almost confined to the middle dorsal area, do not

tend to completely encircle light areas, and, together with the other black markings, are disposed as in *F. hernandesii*, but are very much increased in size. There is no light spot at the upper margin of the nasal pad. Ears whitish cream-buff within, black without, edged anteriorly with tawny, and with a large tawny spot on middle of black external surface. Tail irregularly spotted and banded with black, which color greatly predominates. At base of tail, the light areas are tawny above and white or grizzled below; terminal four or five light rings, hoary grayish, becoming successively narrower until obsolete towards the tip, which is all black. Underparts buffy white, heavily banded with elongate (not quadrate) black spots.

Skull and teeth.—Decidedly larger than *Felis centralis*, the largest skull equalling the smallest adult male of *Felis onca* from South America. Teeth larger than those of *F. centralis*, smaller than in *F. onca*. The premolar teeth are narrower than in South American jaguars. The skull as a whole, aside from general size, is much more heavily ossified than in *Felis centralis*, in this respect being comparable with the South American *F. onca*, from which it is geographically separated by the range of *F. centralis*.

Measurements.—The skin of the type measures 1910 mm. in total length: tail, 670. Skulls of three adult males (Nos. 100,511, U. S. National Museum, Biological Survey Collection, from Palenque, State of Chiapas, Mexico; 9703, U. S. National Museum, from Tehuantepec, Mexico; 67,403, U. S. National Museum, Biological Survey Collection, from San Andres, State of Vera Cruz, Mexico) present the following dimensions: basilar length of Hensel, 211, 217, 227; zygomatic breadth, 178, 188, 180; mastoid breadth, 111, 112, 113; least interorbital breadth, 49, 51, 50; distance between tips of postorbital processes, 74, 81, 75; least postorbital breadth, 14, 47, 46; length of nasals on median line, 62, 67, 66; greatest breadth of nasals, 43, 46, 48; distance from foramen magnum to posterior border of palate, 109, 111, 115; from posterior border of palate to middle incisor tooth, 104, 109, 111; length of postpalatal fossa from base of hamular process, 35, 36, 36; distance between upper carnassial teeth, 60, 57, 58; between upper canines, 36, 36, 39; greatest length of mandible, 178, 179, 182; greatest height of mandible, 90, 93, 90; length of upper incisor toothrow, measured on alveoli, 32, 31, 33; distance across upper canines, 71, 69, 72; length of upper lateral toothrow, 78, 79, 82; length of premolar series, measured on alveoli, 52, 50, 54; crown of upper carnassial, 27 by 13, 25 by 14, 27 by 14; crown of middle upper premolar, 17.3 by 9.2, 17 by 10, 18 by 9.3.

Remarks.—In true *hernandesii*, from the arid region of Mazatlan, in the State of Sinaloa, not only is the ground color paler, but the light areas are increased in size at the expense of the black, giving a decided pallor. The pattern of the tail markings becomes evident in *hernandesii* through reduction of black, and appears as interrupted longitudinal stripes on basal three-fifths of tail; ground color buff at base, darkest above and whitish below, and the subterminal hoary bands more plainly marked than in *goldmani*.

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PROCEEDINGS

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BIOLOGICAL SOCIETY OF WASHINGTON

DESCRIPTION OF A NEW OCELOT FROM TEXAS AND NORTHEASTERN MEXICO.

BY EDGAR A. MEARNS.

Comparison of the ocelots in the United States National Museum Collection shows the single form represented from the United States and northern Mexico to be distinct from those to the southward. None of the numerous names hitherto applied to members of the *Felis pardalis* group of long-tailed cats relate to this animal.* It has heretofore been supposed to be

*The name *Felis albescens* of Pucheran, Voyage Venus, Zoology, mammifères, etc., p. 149; atlas, pl. VIII, 1855, is a pure substitution for the *Felis brasiliensis* of Frederic Cuvier, which latter was based on a specimen received from Cuba, and supposed to have been brought thither from Brazil. Although Pucheran mentions and describes a male specimen sent from Arkansas, in the State of Louisiana, by Trudau, he distinctly states that his name *albescens* is a substitution for *brasiliensis* of Fr. Cuvier, of which it therefore becomes a synonym.

Under the name *Panthera ludoviciana*, Fitzinger, the compiler, describes an intensely-colored ocelot, similar to Hamilton Smith's colored figure 'No. 3,' and gives its range as North America, Louisiana and Arkansas. The animal described (Sitzungsberichte der Akademie der Wissenschaften, Wien, LIX, 1869, p. 258) is smaller, with heavy black markings and reddish-brown coloring above, obviously differing from the form here described. The synonymy is composite, including *Felis tigrina* Erxleben and the Mexican ocelot figured in Griffith's edition of Cuvier's Animal Kingdom as variety No. 3 of Hamilton Smith. Pucheran's *Felis albescens* is not given as a synonym, although a specimen from Arkansas is described.

identical with the *Felis pardalis* of Linnæus, which was based primarily on the 'Cato-Pardus mexicanus' of Hernandez.

Felis limitis sp. nov.

RIO GRANDE OCELOT.

Type adult male, No. $\frac{32679}{41602}$, U. S. National Museum, Biological Survey Collection, taken at Brownsville, Texas, March 4, 1892, by Mr. F. B. Armstrong. Original No. 102.

Characters.—Smaller and grayer than *Felis pardalis* Linnæus, with coloration less intense. Skull relatively broad; dentition weaker; interpterygoid fossa wider and more quadrate; audital bullæ wider and more inflated; postorbital process more flattened and less depressed.

Color.—Winter pelage: Upperparts exquisitely lined and spotted with black on a drab-gray ground. The ground color varies from whitish drab-gray on the unenclosed areas to pale broccoli brown on those that are enclosed or margined with black. The pattern is never exactly the same on any two specimens, although the general effect is similar. There is a distinct vertebral area marked with black, usually appearing as a more or less broken or irregular line of black on the posterior three-fifths, breaking up into parallel or divergent lines or spots anteriorly; it is usually apparent from the occiput to the root of the tail, though always an interrupted line. In places, especially on the rump, it often becomes a single or double row of black spots, while anteriorly it may change to parallel lines or elongated enclosures. On each side of the vertebral line is a parallel series of enclosed or (occasionally) solid black elongate areas, sometimes containing black spots. Succeeding these, laterally, are series of elongate, partially or completely enclosed spots or irregular bands of drab-gray having a trend downward and backward, and separated from one another by grayish-white areas, an especially broad transverse one usually appearing behind the shoulder. Upper side of neck with longitudinal black stripes enclosing drab-gray areas anteriorly and usually open posteriorly. Upper side of head with a broad black, usually interrupted line arising about ten millimeters above the middle of the orbital ring and extending backward on either side to opposite the middle of the ear; between these lateral bands are several interrupted lines of spots, larger behind and breaking up into small spots anteriorly. Eyelids blackish, bordered above and below by whitish bands, succeeded by drab-gray. Side of head with two conspicuous black longitudinal stripes, the upper one commencing as a black spot behind nostril, another in front of inner canthus and involving upper and lower eyelids, extending thence to a point about thirty millimeters below and behind the posterior root of the ear; lower stripe, beginning behind whiskers and below middle of orbit, extends backward to behind ear, then transversely across under side of head, almost joining the corresponding stripe of the opposite side. The space between these black lines is white except anteriorly; that between the up-

per one and the lateral crown stripe forms a large drab-gray triangle, between the eye and ear, in which there are but few small black spots. Muzzle, above plain drab-gray, lined on sides with spots of black edged with drab, and plain grayish white posteriorly. Whiskers mostly white, some becoming brownish black at base. Ear with concavity well coated with whitish-buff hairs; convexity black anteriorly, grayish white posteriorly, the latter encroaching on the middle of the black area, forming a rounded spot, which, in one individual, is narrowly encircled by black posteriorly, cutting it off from the whitish posterior third of the ear. Outer surface of limbs transversely spotted with black, the spots decreasing in size from within outward, becoming obsolete on the toes. Underparts white, very slightly tinged with ochraceous, the pelage drab-gray at base; chin and throat, middle of neck, and belly between thighs, unspotted. Under side of neck with two transverse bands of black slightly mixed with fulvous, interrupted at median line. Hinder part of neck finely spotted with black; chest and belly coarsely spotted, the black spots rounded on chest and transversely elongated on abdomen. Inner surface of limbs, whitish, transversely spotted with black. Under side of feet, hair brown, sometimes mixed with hoary. Tail, whitish gray, speckled with black below; upper surface irregularly barred with light and dark bands, the former grayish white, the latter drab-gray, edged with black, and somewhat grizzled; light rings averaging about ten.

The description of color is based on skins from Fort Clark and Brownsville, Texas. Six from the latter locality were kindly loaned me by Doctor C. Hart Merriam, Chief of the Biological Survey, U. S. Department of Agriculture. These specimens are quite similar except that one immature female (No. 32,681) is remarkable for intensity of the black markings. All were killed in February and March. The summer pelage appears to be more tawny than that of winter; but the available summer skins are unreliable, having been immersed in a fluid that has probably changed the color. For the same reason, no satisfactory comparison of coloration can now be made with *Felis paradalis*.

Skull and teeth.—Compared with *Felis paradalis* Linnæus the skull of *F. limitis* is smaller, relatively short and broad, the postpalatal fossa averaging considerably wider and more quadrate, the audital bullæ much broader and more inflated, and the postorbital processes more flattened and less depressed. The skull of the type, an old male of maximum size, measures as follows: basilar length (Hensel), 114 mm.; zygomatic breadth, 93; width of audital bulla, 17; length of upper lateral toothrow, measured on alveoli, 40; upper premolar series, 28; upper incisor series, 15; crown of upper carnassial tooth, 15.8 by 7.8; crown of middle upper premolar, 10 by 5; lower lateral toothrow, 45. A younger, nearly adult male (No. 7083, U. S. National Museum), from Mirador, Mexico, is considered to represent *Felis pardalis* Linnæus, and presents the following dimensions: basilar length, 122; zygomatic breadth, 91; width of audital bulla, 16; length of upper lateral toothrow, 43.5; upper premolar series, 30; upper incisor series, 17; crown of upper carnassial

tooth, 16.7 by 8.3; crown of middle upper premolar, 11 by 6.4; lower lateral toothrow, 50; but a strictly comparable male skull (No. 14,180, U. S. National Museum), from Talamanca, Costa Rica, gives the following measurements: basilar length, 134; zygomatic breadth, 108; width of audital bulla, 16.3; length of upper lateral toothrow, 47; upper premolar series, 31; upper incisor series, 17; crown of upper carnassial tooth, 17 by 9.3; crown of upper middle premolar, 11 by 6.5; lower lateral toothrow, 53.

Measurements.—Type (old male): length, 1080 mm.; tail vertebræ, 330; length of hind foot, 160; ear above crown, 50. Females average about as follows: length, 950; caudal vertebræ, 300; hind foot, 145; ear above crown, 50. Skulls: greatest diameters of largest male, 140 by 93; largest female, 126 by 87.

Specimens examined.—Seventeen, from the following localities: Fort Clark, Kinney County, Texas, 1; Eagle Pass, Texas, 2; Fort Ringgold, Texas, 1; Brownsville, Texas, 6; Matamoras, State of Tamaulipas, Mexico, 7.

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PROCEEDINGS

OF THE

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TWO NEW CATS OF THE EYRA GROUP FROM NORTH AMERICA.

BY EDGAR A MEARNS.

On comparison of the very distinct new species of eyra cat here described as *Felis fossata* with the descriptions of *Felis eyra* Fischer (1814, based on Azara), the former was found to be a much larger animal, the bare skull measuring one-half inch more in length than the entire head of *Felis eyra*, according to the measurements given by Dr. J. R. Rengger,* an extremely careful naturalist. Rengger's external measurements of eyra cats from Paraguay are slightly greater than those given by Azara. The animal described and figured by Baird as *Felis eyra*,† belonged to a species as large as *Felis fossata*, consequently much larger than *Felis eyra* Fischer. The water-color drawing, taken from Dr. Berlandier's original, from which Baird's colored figure was reproduced, depicts the animal "as a uniform light reddish-brown, without any spots whatever, and no lightening of tints beneath. The ears are rather pointed. The tail is slender and tapering gently to the tip, which is not tufted. The tail is rather longer than the body, by about half

*Naturgeschichte der Saeugethiere von Paraguay, 1830, p. 209.

†Mammals of North America, 1857, p. 88, pl. LXII, fig. 1 (animal), pl. LXXIII, fig. 2 (skull); Report United States and Mexican Boundary Survey, II, 1859, p. 10, pl. II, fig. 1 (animal), pl. XIII, fig. 2 (skull).

the length of the neck. The figure also represents the pupil as vertical; other authors describe the pupil of *F. eyra* as round." (Baird.) On account of the larger size of this animal, and the absence of the white or whitish markings on the head, described by Azara,* Fischer, Rengger, and other authors in their accounts of *Felis eyra*, the animal described by Baird under that name must be considered a distinct species, especially now that another species of the eyra (*Felis fossata*) has been found inhabiting Central America. I propose the name *Felis apache* for the eyra cat of Tamaulipas, described by Berlandier and Baird in the works cited. The type will be skull No. 1373, United States National Museum; a youngish-adult female, collected by Dr. Berlandier, at Matamoras in the State of Tamaulipas, Mexico.

Felis fossata sp. nov.

YUCATAN EYRA CAT.

Type.—No. 7036, United States National Museum; skull of adult from Merida, Yucatan, collected by D. Schott.

Cranial characters.—Skull narrow, its greatest diameters 91 by 60 mm.; convex posteriorly, flattened supraorbitally, with marked declination forwards from middle of nasals; interfrontal region with a deep fossa, V-shaped on section, 8 mm. in length, between the anterior extremity of the interfrontal suture and the nasal bones, which latter are similarly infolded, continuing the fossa forward to the extremity of the nasals as a groove which gradually decreases in depth towards their extremity; orbit relatively small; nasal bones narrow, elongated at sides, pointed posteriorly where they are bent downward to form the anterior portion of the frontal fossa; anterior narial opening high and narrow; infraorbital foramen single, and round; interorbital region narrow; jugal broad; posterior narial fossa wide, with a scarcely-perceptible postpalatal notch; audital bullæ elongate, high, pointed anteriorly, scarcely con-

*Azara gives the following: "Length, thirty-one inches; tail, eleven inches and a half, more bushy than that of the cat; and the other measurements proportioned to those of the preceding species [yagüarundi']. The whole coat is of a red colour, except the lower jaw, the mustachios, and a small spot on each side of the the nose, which are white. Its fur does not yield in softness to that of the preceding species [*Felis yaguarundi*], and would be highly esteemed by furriers." (London edition of Azara's Natural History of the Quadrupeds of Paraguay and the River La Plata, 1837, pp. 225-6.)

stricted laterally; sagittal and occipital crests moderately developed; dentition heavy, as compared with *Felis apache*.

Comparison and cranial measurements.—Elliot's account of the cranial characters of *Felis eyra* Fischer,* based on specimen No. 1226, British Museum Collection (locality not given), contains, besides nonessentials, the following: "nasals are broad, and on a line with the processes of the maxillas at their articulation with the frontal bone. * * * Auditory bullæ prominent, oblong; mastoid foramen of a triangular shape. Zygoma well arched. Canines moderate." No cranial measurements are given. The skull of the type and only specimen of *Felis fossata* differs from the above in having the nasals bones narrow, audital bullæ pointed, mastoid foramen oval, zygoma slightly arched, canines large. The skull of *Felis apache* is readily distinguished from that of *F. fossata* by the absence of a frontal fossa, the marked lateral constriction of the audital bullæ, the narrowness of the posterior narial fossa, and the small size of the teeth. It is also noted that the infraorbital foramina are double. The two species are of similar size. The following dimensions of the type skull of *Felis fossata* are followed by those of the type of *F. apache*, in parenthesis: basilar length of Hensel, 78 mm. (76); zygomatic breadth, 60 (60); least interorbital breadth, 16 (19); intertemporal breadth, 30 (32); breadth of braincase above auditory meatus, 42 (11); palate, length from henselion to posterior edge, excluding median notch, 33.7 (32.2); greatest diameter of orbit, 23 (26); greatest length of nasal bone, 23 (20); breadth of nasal bones opposite end of nasal processes of frontals, 7 (8.5); anterior narial orifice, 14 by 12 (12 by 11); breadth of jugal, 10 (7); audital bulla, 20 by 12 (18 by 10); breadth between outer corners of carnassials, 37.2 (33); breadth of posterior narial fossa, 13 (12); front of upper canine to back of carnassial, 27.5 (25); length of upper carnassial, 12.2 (11); length of lower carnassial, 9.4 (8.8).

*Monograph of the Felidæ, 1883, p. 65.

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PROCEEDINGS

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ON THE MAINLAND FORMS OF THE EASTERN DEERMOUSE, *PEROMYSCUS LEUCOPUS* (RAFINESQUE).

BY EDGAR A. MEARNS.

Peromyscus leucopus was originally described by Rafinesque from specimens taken during a journey through "the lower parts of the Ohio, the Wabash, Green River, Barrens, Prairies, and the states of Indiana, Illinois, &c." Kentucky is generally considered to be the type locality.* Specimens from Lexington, Kentucky, collected by the writer and assumed to be typical, are found to agree with those from other parts of the austral zone east of the Mississippi River; but, in the transition zone, fairly well-marked geographical races occur in New York and New England in the East, and in Minnesota in the West. The range of the species does not extend beyond the northern boundary of the transition zone, but meets with that of *Peromyscus canadensis* at the lower edge of the boreal zone. In these forms, which may be recognized by the following descriptions, the under surfaces are white with more or less gray

*In a letter "*dated at Louisville, Falls of Ohio, 20th July*, 1818", published in the American Monthly Magazine, Vol. III, September, 1818, p. 354, Rafinesque states respecting "*Quadrupeds*": "I have discovered and described 3 new species: 1. *Musculus leucopus;* 2. *Gerbillus Sylvaticus;* and, 3. *Noctilio mystax*, Raf."

at the base of the hair, and the general color above is broccoli-brown in summer, and cinnamon or yellowish wood-brown finely sprinkled with black in winter.

Peromyscus leucopus leucopus (Rafinesque).

KENTUCKY DEERMOUSE.

In summer coated with short hairs; color broccoli-brown above, finely sprinkled with black, sparsely on the sides and thickly in a broad median dorsal area; ears scantily coated, hair brown, with scarcely perceptible hoary edges; eyelids bordered with black; feet scantily coated, the skin appearing between the hairs; tail plainly showing annuli above and below, and so scantily coated that it does not appear distinctly bicolored or slightly penciled at tip; underparts gray partly concealed by white tips to the hairs.

In winter more heavily coated; color yellowish wood-brown above, white below, with the gray underfur appearing between the white tips of the hairs; tail very slightly penciled, not very sharply bicolored, and with annuli seldom wholly concealed; feet and ears not well coated.

Measurements.—Total length, 180 mm.; caudal vertebræ, 80; hind foot, 21; ear above crown, 12.5.

Peromyscus leucopus noveboracensis (Fischer).

NEW YORK DEERMOUSE.

In summer the whole animal is more heavily coated than in true *leucopus*, the skin of the feet being concealed by the hair; tail bicolor, with annuli usually concealed, and the tip well penciled; ears also a little more heavily coated; upperparts wood-brown instead of broccoli-brown.

In winter the coat is very full and long; tail moderately penciled, sharply bicolor, heavily coated, with the annuli entirely concealed; ears and feet well coated, the former with hoary edges and almost bushy at base, and the latter pure white; upperparts yellowish wood-brown; ears and upperparts generally more decidedly lined with black; pelage of underparts very dense, and white almost to the base.

Measurements.—Length, 185 mm.; tail vertebræ, 85; hind foot, 21; ear above crown, 13.5.

Peromyscus leucopus minnesotæ subsp. nov.

MINNESOTA DEERMOUSE.

Type.—No. 82,717, United States National Museum Collection. Adult female, collected at Fort Snelling, Hennepin County, Minnesota, November 30, 1890, by Edgar A. Mearns. Original No. 1181.

Characters.—Form stout; ears small, hairy on anterior half of outer surface; color decidedly paler than in the eastern forms; a whitish tuft, in winter, at anterior base of ear; pelage intermediate in length between the two eastern forms; skull as in the typical form.

Color in summer.—Upperparts light bistre, sparingly lined with black hairs; ears with outer surface sepia, hairy anteriorly and almost naked posteriorly, thinly coated with grayish hairs on inner surface, and faintly hoary on edge; feet and tail so scantily clothed that the skin and annuli are visible between the hairs; tail slightly penciled; gray of underparts partially concealed by white-tipped hairs.

In winter the upperparts are cinnamon, coarsely but sparsely lined with black; ears light brown instead of sepia, with a slight tuft of whitish hair at the base anteriorly, and with faint hoary rims; underparts white, the gray underfur being concealed; feet and tail moderately hairy, the latter slightly penciled.

Young mouse-gray above, grayish white below; ears slate-black on anterior band, grayish posteriorly, very faintly edged with hoary; tail hair-brow above, white below.

Measurements.—Length, 175 mm.; tail vertebræ, 75; hind foot, 21.5; ear above crown, 11.5.

VOL. XIV, PP. 157-159 AUGUST 9, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

DESCRIPTIONS OF THREE NEW ASIATIC SHREWS.*

BY GERRIT S. MILLER, JR.

Among the Asiatic shrews in the United States National Museum are two species that appear to have not yet been named. A third was recently submitted to me for determination by Mr. Oldfield Thomas.

Crocidura ilensis sp. nov.

Type.—Adult female (skin and skull) collected in open grass country at Kukturuk, (altitude, 5400 ft.) Ili, central Asia, October 12, 1899, by P. Church. Original number, 4. Specimen to be presented to the British Museum.

Characters.—In general similar to Kashmir specimens of *Crocidura myoides* (Blanford), but smaller. Color distinctly paler than in the Kashmir animal, the feet nearly white. Skull with more slender rostrum and smaller teeth.

Color.—Dorsal surface pale drab, the hairs drab-gray subterminally and a gray about matching Ridgway's No. 6 (Pl. II) at base. Ventral surface silvery whitish gray in distinct but not sharply defined contrast with color of back. Feet whitish gray. Tail indistinctly bicolor, whitish gray below, drab above.

Skull and teeth.—The skull is distinctly smaller than that of *C. myoides* and *C. russula*, which are of essentially the same size. In form, how-

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ever, it is not peculiar. Teeth as in *C. myoides* but smaller throughout. The unicuspid teeth resemble those of the Kashmir animal in their smaller size and less terete form as compared with those of *C. russula*.

Measurements.—External measurements of type: total length, 85; head and body, 55; tail vertebræ, 30; hind foot, 13; hind foot without claws, 12.

Cranial measurements of type: greatest length, 16.6; greatest postorbital breadth, 8.4; greatest antorbital breadth, 6; least interorbital breadth, 4; mandible, 10; entire maxillary toothrow, 8.4; entire mandibular toothrow, 8.

Specimen examined.—One, the type.

Remarks.—*Crocidura ilensis* agrees with *C. lignicolor* in size, but is very different in color. In the latter character it is almost identical with *C. sicula*, though lacking the faint broccoli-brown wash on the dorsal surface. The skull is only a trifle smaller than that of *C. sicula* and the toothrow as a whole is of about the same length; but the unicuspid teeth are much smaller.

Crocidura shantungensis sp. nov.

Type.—Adult (skin and skull) No. 86,151, United States National Museum. Collected at Chimeh, Shantung, northern China, June, 1898, by Paul D. Bergen.

Characters.—Size and general appearance as in *Crocidura ilensis*, but molar teeth both above and below distinctly smaller.

Color.—In color *Crocidura shantungensis* closely resembles *C. ilensis*, but the feet are less whitish and the dorsal surface is washed with broccoli-brown exactly as in *C. sicula*.

Skull and teeth.—The hinder part of the skull is broken away so that the form cannot be compared with that of the allied species. The rostrum differs from that of *C. ilensis* in greater relative breadth and depth. The teeth are throughout smaller than those of *C. ilensis*, but the difference is most noticeable in the molars. I can detect no tangible differences in form.

Measurements.—External measurements of type (from skin): total length, 87; head and body, 62; tail vertebræ, 25; hind foot, 13 (12).

Cranial measurements of type: entire maxillary toothrow, 7.8; greatest antorbital breadth, 5.4; mandible, 9; entire mandibular toothrow, 7.

Specimen examined.—One, the type.

Remarks.—While this species exactly resembles *C. sicula* in color, it is readily distinguished by its shorter, more bristly tail. In this character it differs from all the known European members of the genus and agrees with the Asiatic *C. myoides*, *C. ilensis*, and *C. lignicolor*.

Sorex macropygmæus sp. nov.

Type.—Adult male (skin and skull) No. 84,012, United States National Museum. No. 8019, Leonhard Stejneger. Collected at Petropaulski, Kamchatka, September 23, 1897, by Mrs. Stejneger.

Characters.—In general appearance similar to *Sorex minutus* but size considerably greater (hind foot, 13, greatest length of skull, 17).

Color.—Upperparts sepia, slightly darker across lumbar region, and becoming paler on sides where a rather abrupt change takes place to the broccoli-brown of the underparts. Tail distinctly bicolor, dark sepia above and at tip, light shining broccoli-brown beneath. Feet like under surface of tail.

Skull and teeth.—The skull throughout is larger than that of *Sorex minutus*, forming in this respect an exact intermediate between that of the pigmy shrew and *Sorex araneus*. In form it is not peculiar.

Teeth as in *Sorex minutus* except that the third and fourth unicuspids are subequal when viewed from the side, that is the fourth is not distinctly smaller than the third as in the case in *S. minutus*.

Measurements.—External measurements of type*: total length, 107; head and body, 70; tail vertebræ, 37; hind foot, 13 (12).

Cranial measurements of type: greatest length, 17.6 (15.4)†; greatest postorbital breadth, 8.4 (7.6); greatest antorbital breadth, 4.4 (4); least interorbital breadth, 3.4 (2.8); mandible, 8 (6.6); entire maxillary toothrow, 7.6 (6.8); entire mandibular toothrow, 7 (6).

Specimens examined.—Three (one in alcohol), all from the type locality.

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*From fresh specimen by collector.

†Measurements in parenthesis are those of an adult *Sorex minutus* from Upsala, Sweden.

VOL. XIV, PP. 161-163 AUGUST 9, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

SOME NEW AND ADDITIONAL RECORDS ON THE FLORA OF WEST VIRGINIA.

BY CHARLES L. POLLARD AND WILLIAM R. MAXON*.

In the latter part of August, 1899, the writers spent four days in south central West Virginia, making collections of plants at Quinnimont, Fayette Co., and at Lowell, Summers Co., both on the line of the Chesapeake and Ohio Railroad. In view of the extensive additions to the known flora of the state recently published by Mr. E. L. Morris†, supplementing Millspaugh and Nuttall's "Flora of West Virginia‡," it is quite significant of the work yet to be done that out of the total of 125 numbers of our collection 30 should be new to the state,—the majority being cryptogamous plants.

For the determination of the fungi we are indebted to Mrs. Flora W. Patterson; for that of the lichens to the late Thomas A. Williams; of the hepaticae to Dr. Marshall A. Howe; and of the mosses, with one exception, to Mrs. E. G. Britton. The names of species new to the flora are printed in bold-face type; those representing merely additional records, in small capitals.

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†Proc. Biol. Soc. Wash. 13: 171-182. 1900.

‡Field Columb. Mus. Pub. (Bot. Series) 1: 65-276. 1896.

Thallophyta.

FUNGI.

Uromyces Howei Peck. On *Asclepias Syriaca.* Lowell, August 25. (No. 130.)

Gnomonia ulmae (Sacc.) Thum. On dead leaves of *Ulmus* sp. Lowell, August 25. (No. 131.)

Lichenes.

Coenogonium interpositum Nyl. Sterile; growing with thallus of *Cladonia* sp. Quinnimont, August 22. (No. 141.)

Lecidea speirea Ach. Quinnimont, August 21. (No. 134.)

Lecidea albocoerulescens (Wulf.) Schaer. Quinnimont, August 22. (No. 138.)

Pertusaria corallina (L.) Fr. Quinnimont, August 22. (No. 140.)

Parmelia cetrata Ach.? Sterile, but probably referable to this species. Lowell, August 23. (No. 146.)

Parmelia tiliacea (Hoffm.) Flk. Lowell, August 23. (No. 151.)

Cladonia squamosa Hoffm. Quinnimont, August 22. (No. 143.)

Cladonia squamosa denticollis (Hoffm.) Flk. Quinnimont, August 22. (No. 136.)

Placodium rupestre (Scop.) Br. & Rostr. Quinnimont, August 23. (No. 155.)

Theloschistes concolor effusa Tuckerm. Lowell, August 23. (No. 150.)

Verrucaria fuscella (Tum.) Ach. Lowell, August 23. (No. 154.)

Pyrenula punctella (Nyl.) Williams, comb. nov. (*Verrucaria punctella* Nyl. Pyrenoc. 46, 1858.) Lowell, August 23. (No. 156.)

Bryophyta.

HEPATICAE.

Jungermannia Schraderi Mart. Quinnimont, August 22. (No. 113.)

Cephalozia Virginiana Spruce. Quinnimont, August 22. (No. 115*a* in part, which is mostly *C. curvifolia.*)

Musci.

Fissidens subbasilaris Hedw. Lowell, August 23. (No. 117.)

Ditrichum tortile (Schrad.) Hampe. Quinnimont, August 21. (No. 105.)

Thuidium delicatulum (L.) Mitt. Quinnimont, August 21. (No. 111.)

Thuidium minutulum (Hedw.) Br. & Sch. (Determined by Dr. G. N. Best.) Lowell, August 23. (No. 118.)

Amblystegium fluviatile (Sw.) Br. & Sch. Quinnimont, August 21. (No. 110.)

Rynchostegium rusciforme (Neck.) Br. & Sch. Quinnimont, August 21. (No. 109.)

Hypnum Haldanianum Grev. Quinnimont, August 22. (No. 115.)

Pteridophyta.

Polypodium vulgare deceptum Maxon, Proc. U. S. Nat. Mus. **23**: 628. 1901. Quinnimont, August 21. (No. 25.)

Spermatophyta.

Andropogon nutans avenaceus (Michx.) Hack. (Determined by Mr. Carleton R. Ball.) Common in bottom lands of the New River. Quinnimont, August 21. (No. 36.)

Trautvetteria Carolinensis (Walt.) Vail. Quinnimont, August 21. (No. 26.) Growing in some abundance along the banks of Laurel Creek: this station confirms its existence in the State, as Doctor Millspaugh questioned the locality cited by him.

Chamaecrista nictitans commixta Pollard, and Maxon var. nov.

Plant of low statute, very densely and divaricately branching, the stems finely pubescent or puberulent; leaves resembling those of nictitans, but often with more numerous leaflets; petiolar gland cupulate or truncate, usually nearly sessile; flowers and fruit as in *C. nictitans*.

Type in U. S. National Herbarium, No. 357,069, collected by Charles L. Pollard and William R. Maxon in alluvial soil along the New River at Quinnimont, W. Va., August 21, 1899. (No. 31.)

Galactia regularis (L.) B. S. P. Quinnimont, August 21. (No. 29.) Bottom lands of the New River.

Strophostyles helvola (L.) Britton. Quinnimont, August 21. (No. 32.) Bottom lands of the New River.

Physalis heterophylla Nees. Quinnimont, August 21. (No. 38.) Bottom lands of the New River.

Tagestes patula L. Quinnimont, August 21. (No. 20.) Escaped from cultivation along the railroad near Laurel Creek.

Solidago neglecta Torr. & Gray. Quinnimont, August 21. (Nos. 33 and 34.) Bottom lands of the New River. Recently reported by Doctor Millspaugh from another locality in the State.

VOL. XIV, PP. 165-167 AUGUST 9, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

NEW AND LITTLE-KNOWN COCCIDÆ. I. RIPERSIELLA AND CEROPUTO.

BY T. D. A. COCKERELL.

Ripersiella Tinsley.

Ripersiella, Tinsley, in Cockerell, Canad. Entom., 1899, p. 274.

Dactylopiine Coccidæ with antennæ of not more than six joints, placed close together at the extreme anterior portion of the head. Type *Ripersiella rumicis* (=*Ripersia rumicis*, Maskell, Tr. N. Z. Inst., XXIV, 37).

Prof. Tinsley had intended to give an account of this genus, but he has been prevented by other duties, and at his suggestion I here set forth its characters. The appearance of the species is very peculiar, and anyone who has seen them alive is sure to be convinced of the validity of the genus.

Ripersiella maritima (=*Ripersia maritima*, Ckll., Insect Life, VII, 42) and *R. leucosoma* come nearer to *Ripersia* than the other two species. *R. Kelloggi* (Ehrh. & Ckll.) from Mountain View, California, departs farthest from the *Ripersia* type, having 5-jointed antennæ only about 75 μ long, and 15 μ apart, the second to fourth joints each about twice as broad as long.

Ripersiella leucosoma sp. n.

♀. Perfectly white elongated, the largest about 3 mm. long; caudal lobes low and rounded, not at all prominent, with a couple of bristles like those of the anal ring; abdominal segments very convex on lateral margins; legs and antennæ pale reddish-brown; pairs of legs about 400 μ apart; hind legs about 1100 μ from end of body; hind legs with fe-

mur + trochanter about 140 μ, tibia about 90, tarsus about 60; antennæ at extreme anterior end of body, which is somewhat pointed; antennæ 6-jointed, about 120 μ apart, and about 186 μ long; antennal joints in μ, (1.) 30-39, (2.) 18-24, (3.) 30, (4.) 18-21, (5.) 18-21, (6.) 12-48; joints 4 and 5 about as broad as long, with convex sides; formula 6 (31) 2 (45) or 613 (245); mouth-parts (excluding rostral filaments) about 220 μ long; labium narrow but not very long, about 100 μ long and 50 wide.

Hab. Las Vegas, New Mexico, 6400 ft. alt., under rocks with *Lasius americanus;* first found by Wilmatte P. Cockerell, April 11, 1901. A larger insect than *R. maritima*, but closely allied.

Ripersiella kelloggi Ehrhorn & Ckll., sp. n.

This species was found by Mr. Ehrhorn on roots of bunch grass at Mountain View, California, in December, 1898, but no description has yet been published. It is easily recognized by the characters mentioned above. The length of the last antennal joint is about 30 μ. The mouth parts are ordinary, the labium not elongated.

Ceroputo Sulc.

The genus *Ceroputo*, Sulc. was founded in 1897 for a species found in Bohemia, named *C. pilosellæ*, Sulc. It has never been recognized as American, but after a study of its characters, I find that the species of the group of *Phenacoccus yuccæ* are certainly congeneric. The genus is a fairly distinct one by the large size and spiny skin, with a frequent development of waxy lamellæ resembling those of *Orthezia*. The American forms are *Ceroputo yuccæ* (*Pseudococcus yuccæ*, Coquillett, W. Am. Sci., 1890, p. 44), *C. yuccæ mexicanus* (*Dactylopius mexicanus*, Ckll., Ann. Mag. Nat. Hist., (6) XII, p. 49), *C. barberi* (*Phenacoccus yuccæ barberi*; Ckll., Ann. Mag. Nat. Hist., (6) XVI, p. 61), *C. bahiæ* (*Phenacoccus bahiæ*, Ehrhorn, Can. Ent., 1900, p. 314), and *C. calcitectus* (*Phenacoccus calcitectus*, Ckll., Ann. Mag. Nat. Hist., (7) VII, p. 334).

In *C. barberi* the last three antennal joints are decidedly longer than in *C. yuccæ*. To the above must now be added the following:

Ceroputo lasiorum sp. n.

♀. About 4 mm. long, 2⅛ broad, almost white, with a faint greenish tinge, covered with white secretion. The dense secretion covering the dorsum looks like wool, instead of having a chalky appearance as in *C. calcitectus;* it is also not separable into distinct lamellæ, nor are the hindmost lamellæ at all prolonged (in *calcitectus* they form two tails); in young individuals the lateral tufts are distinct. Legs pale reddish-brown; sepia brown in mounted specimens. Boiled in *liquor potassæ*, the ♀ turns pink, but does not stain the liquid.

Skin with many round glands, and small spines; sides with large brownish patches of spines; anal ring with six hairs. Claw with denticle on inner side: no tarsal digitules.

Adult. Measurements of antennæ and legs in μ: Antennal segments: (1.) 90, (2.) 90, (3.) 153, (4.) 96, (5.) 99, (6.) 96, (7.) 92, (8.) 99, (9.) 141. Formula 39(1245678).

Middle leg: femur + trochanter 640; tibia 560; tarsus (without claw) 200. Tarsal bristles about 60 μ.

Penultimate stage. Measurements in μ: Antennal segments: (1.) about 60, (2.) 90, (3.) 126, (4.) 75, (5.) 75, (6.) 75, (7.) 75, (8.) 126. Only 8 joints. Anterior legs: femur + trochanter, 440; tibia 360; tarsus (without claw) 200.

Middle legs: femur + trochanter 460; tibia 400. Posterior legs; femur + trochanter 480; tibia 470; tarsus 200.

Hab.—Las Vegas, N. M., April, in nests of *Lasius interjectus* under rocks. (*Wilmatte P. Cockerell.*)

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

DESCRIPTIONS OF A NEW GENUS AND ELEVEN NEW SPECIES AND SUBSPECIES OF BIRDS FROM MEXICO.

BY E. W. NELSON.

The following descriptions are based upon material in the Biological Survey collection and mainly upon specimens obtained during a recent trip to the peninsula of Yucatan by Mr. E. A. Goldman and myself. I am indebted to Mr. Robert Ridgway and Dr. Chas. W. Richmond, Curator and Assistant Curator of Birds in the National Museum, for their usual kind assistance during the preparation of this paper.

All measurements are in millimeters.

Crypturus sallæi goldmani, new subspecies. Yucatan Tinamou.

Type No. 167,715, ♂ ad., U. S. National Museum, Biological Survey collection, from Chichen Itza, Yucatan, Mexico. Collected February 1, 1901, by E. W. Nelson and E. A. Goldman.

Distribution.—Yucatan, Mexico.

Subspecific characters.— ♂, smaller than typical *C. sallæi* with generally paler coloration: back grayer; the light transverse bars more strongly marked and extending farther forward on back and wings; underparts paler, more buffy (less rufous); ♀, paler and more strongly and extensively barred with light color on back and wings.

Dimensions of type.—Wing 152; tail 46; culmen 27; tarsus 44.

Remarks.—The males of the present form differ more from those of *C. sallæi* both in size and color than do the females.

Bubo virginianus mayensis new subspecies. Yucatan Horned Owl.

Type No. 167,727, ♀ ad., U. S. National Museum, Biological Survey collection, from Chichen Itza, Yucatan, Mexico. Collected February 1, 1901, by E. W. Nelson and E. A. Goldman.

Distribution.—Peninsula of Yucatan.

Subspecific characters.—Most like *B. virginianus pallescens* but much smaller with less clear gray and more dingy fulvous suffusion on entire dorsal surface including tail; sides of body, flanks and under tail coverts rather regularly barred with narrow dark bands, not crowded near tips of feathers as usual in *pallescens;* sides of flanks with concealed suffusion of dull buffy; middle of breast and belly dull white; lower half of tarsus and feet dull white without markings.

Dimensions of type.—Wing 335; tail 178; culmen 44; tarsus 66.

Remarks.—This is the smallest of the subspecies of *Bubo virginianus* and is a pale race probably limited to the arid part of the peninsula of Yucatan.

Crax chapmani new species. Chapman's Curassow.

Type No. 167,370, ♀ ad., U. S. National Museum, Biological Survey collection, from Puerto Morelos, Eastern Yucatan, Mexico. Collected March 28, 1901, by E. W. Nelson and E. A. Goldman.

Distribution.—Heavy forests of southern Campeche and southern and eastern Yucatan, Mexico; probably ranging thence into adjacent parts of Belize and Guatemala.

Description of type.—Head and throat dull white thickly and finely speckled with black on lores and around eyes; sides of crown more coarsely and sparingly black spotted; crest white with narrow black tips finely bordered with white; bases of crest feathers on front of crown with small black spots or incomplete bars; posteriorly crest feathers only marked at base with fine dark shafts or shaft streaks; neck all around from head to body strongly barred black and white—black bars broadest, and white bars on underside of neck more or less edged with buffy; shoulders, upper surface of wings and tail broadly and regularly barred with broad bands of blackish brown and slightly narrower bands of golden buffy; dark bars approaching black on shoulders and on outer half of tail; buffy bars with a decided grayish cast on outer half of tail; primaries mainly buffy, paler than same color on secondaries and more narrowly and irregularly barred and spotted with blackish and reddish brown; middle of back and rump narrowly barred with same colors as secondaries and tail; entire underparts including breast, abdomen, sides of body, flanks, thighs and undertail coverts uniform ochraceous buffy —a few narrow irregularly placed transverse blackish brown marks occurring on buffy feathers of fore breast; under side of tail black with narrow golden buffy transverse bars.

Dimensions of type.—Wing 380; tail 368; culmen 51; tarsus 116.

Remarks.—The discovery of this magnificent bird, one of the largest and handsomest of the genus, was a quite unexpected result of our work in Yucatan. Only a single specimen could be secured by us, although the feathers of others were seen about Indian camps in southern Campeche in December, 1900, by Mr. Goldman, and I came on a hunter in the forest in eastern Yucatan just after he had finished plucking one. They were evidently much less common than *Crax globicera*, though they frequent the same forests. Unfortunately we failed to secure a male so this sex remains unknown. The ovaries of the type were becoming enlarged showing that the breeding season was near, at the date of her capture.

The Maya Indians distinguish this species from the Cambúl (*Crax globicera*) and call it Bolonchan or Bolonchana.

It gives me pleasure to dedicate this fine bird to Mr. F. M. Chapman whose interesting 'Notes on Birds observed in Yucatan' (Bull. Am. Mus. Nat. Hist., VIII, 271–290, 1896) is the best local paper we have on the birds of this region.

Nyctagreus* new genus.

Type.—*Caprimulgus yucatanicus* Hartert, Cat. Birds British Museum, XVI, 575, 1892.

Distribution.—Yucatan and Campeche, Mexico.

Generic characters.—Bill rather long and narrow; nostrils flattened oval, slightly tubular, situated well forward on bill and opening laterally; rictal bristles coarse, scarcely curved at tips; tarsus a little longer than middle toe without claw and bare of feathers except near proximal end, as in *Phalænoptilus;* second and third primaries equal and longest; fourth a trifle shorter; first about 10 mm. shorter than second and about equal to fifth, thus giving a formula very close to *Otophanes;* tail slightly rounded and a little shorter than wing; plumage and color pattern as in *Antrostomus.*

Nyctidromus albicollis yucatanensis new subspecies.

Yucatan Parauque.

Type No. 167,682, ♂ ad., U. S. National Museum, Biological Survey collection, from Tunkas, Yucatan, Mexico. Collected February 17, 1901, by E. W. Nelson and E. A. Goldman.

Distribution.—Peninsula of Yucatan (including State of Campeche), Mexico.

Subspecific characters.—Larger and grayer than typical *N. albicollis;* a little smaller and darker grayish than *N. albicollis merrilli;* otherwise generally resembles latter in coloration but darker with smaller light

*νύξ=night; ἀγρεύς=hunter.

spots on wing coverts; distal half of outer web of next to outer tail feather white with border of dark brown or blackish, but never wholly or mostly dark as usual in the other forms of this species.

Dimensions of type.—Wing 176; tail 165; culmen 15; tarsus 28.

Remarks.—The broad band of white next to shaft on outer web of next to outer tail feather appears to be a constant character in this form and gives the readiest means of separating it from specimens of *N. albicollis* which approach it in color.

Attila mexicanus new species.

Type No. 166,131, ♂ ad., U. S. National Museum, Biological Survey collection, from Frontera, Tabasco, Mexico. Collected April 27, 1900, by E. W. Nelson and E. A. Goldman.

Distribution.—Tabasco, Eastern Mexico (Metlaltoyuca, northeastern Puebla?).

Specific characters.—Similar to *Attila citreopygius* but larger: Crown and malar area streaked with black; top and sides of neck and back, to rump, dark russet brown; rump rich cinnamon brown shading into ochraceous on upper tail coverts; wing bars and edgings like back; upper side of tail slightly paler brown than back and darkest near tip; chin and throat grayish white streaked with blackish; fore breast flammulated with dull brown streaks edged with dull yellowish; abdomen white with pale rusty shafts; sides of breast like back; sides of body and flanks raw sienna, this color bordering and sharply contrasting with color of abdomen; under tail coverts chrome yellow.

Dimensions of type.—Wing 98; tail 82; culmen 28; tarsus 26.

Remarks.—The type of *Attila mexicanus* is from the coast forests of Tabasco and is the most strongly rufous of any species of the genus known north of Panama. A specimen in our collection from Metlaltoyuca, Puebla, is equally large but is more like *A. citreopygius* in general appearance and probably represents a subspecies of *A. mexicanus*. A specimen from Palenque, Chiapas, is very near to typical *A. citreopygius* in size and color. Two males of the latter species in the National Museum from the Escondido River, Nicaragua, measure as follows viz.: No. 128,332: Wing 92; tail 72; culmen 26; tarsus 21. No. 128,333: Wing 91; tail 71; culmen 24; tarsus 24.

Myopagis yucatanensis new species. Yucatan Flycatcher.

Type No. 167,552, ♀ ad., U. S. National Museum, Biological Survey collection, from La Vega, Yucatan, Mexico. Collected March 22, 1901, by E. W. Nelson and E. A. Goldman.

Distribution.—Known only from type locality.

Specific characters.—Similar to *Myopagis placens* in coloration but much smaller, with entire crown dull broccoli brown overlying dull gray basal

color of feathers; concealed yellow crown patch very small and limited to part adjoining nape.

Dimensions of type.—Wing 62; tail 56; culmen 10; tarsus 17.

Pachyrhamphus major itzensis new subspecies.

Yucatan Pachyrhamphus.

Type No. 167,766, ♀ ad., U. S. National Museum, Biological Survey collection, from Chichen Itza, Yucatan, Mexico. Collected January 29, 1901, by E. W. Nelson and E. A. Goldman.

Distribution.—Northern Yucatan.

Subspecific characters.—Smaller and paler than typical *P. major* from Jalapa, Vera Cruz. Compared with *P. major:* ♂, clearer white below, especially on throat and abdomen, with black area on back restricted or almost wanting. ♀, back duller, more grayish brown; underparts paler—a dingy primrose yellow.

Dimensions of type.—Wing 77; tail 57; culmen 14; tarsus 21.

Remarks.—The males show rather stronger differences than the females.

Icterus cucullatus duplexus new subspecies. Island Oriole.

Type No. 167,644, ♂ ad., U. S. National Museum, Biological Survey collection, from Mujeres Island, Yucatan, Mexico. Collected March 24, 1901, by E. W. Nelson and E. A. Goldman.

Distribution.—Mujeres Island and occasional on adjacent shore of eastern Yucatan.

Description.—Male with close general resemblance to *I. c. nelsoni* but smaller with slightly paler and more chrome yellow underparts; broad frontal band of black bordering bill; decidedly less white on wings. Female: Dingy cadmium yellow like the female of *I. c. igneus*..

Dimensions of type.—Wing 86; tail 90, culmen 18; tarsus 23.

Icterus cucullatus cozumelæ new subspecies.

Cozumel Hooded Oriole.

Type No. 167,652, ♀ ad., U. S. National Museum, Biological Survey collection, from Cozumel Island, Yucatan, Mexico. Collected April 11, 1901, by E. W. Nelson and E. A. Goldman.

Distribution.—Cozumel Island, Yucatan.

Subspecific characters.—Males similar in color to *Icterus cucullatus igneus* but rather smaller with larger bills. Females decidedly smaller than those of *I. c. igneus* with underparts paler, duller yellow; middle of back grayer; yellow on top of head and rump more greenish or olivaceous.

Dimensions of type.—Wing 74; tail 75; culmen 17; tarsus 23.

Remarks.—Both males and females of this form may be distinguished from *I. c. duplexus* by their deeper coloration.

Stelgidopteryx ridgwayi sp. nov.

Ridgway's Rough-winged Swallow.

Type No. 167,947, ♂ ad., U. S. National Museum, Biological Survey collection, from Chichen Itza, Yucatan, Mexico. Collected January 29, 1901, by E. W. Nelson and E. A. Goldman.

Distribution.—Yucatan and other parts of Mexico south of the Isthmus of Tehuantepec, and probably adjacent part of Guatemala.

Description.—Lores with distinct grayish white spots just back of nostrils; rest of upper parts blackish brown, darkest on wings and tail and slightly paler on rump and tertiaries, latter narrowly edged with grayish white (color of upper parts much darker than in *S. serripennis*); throat, breast and sides of body grayish brown, palest on throat, rest of underparts of body white; under tail coverts white with broad black tips to longest coverts; size larger than *S. serripennis* and tail much more deeply emarginate.

Dimensions of type.—Wing 117; tail 57; culmen 9; tarsus 12.

Remarks.—This well marked species was common in Yucatan, living in the caves in the sides of cenotes or natural wells. They were also found about the foothills at Teapa, Tabasco. Its dark back and black tips to under tail coverts render it easily separable from its nearest relative, *Stelgidopteryx serripennis.*

Troglodytes peninsularis new species. Mangrove House Wren.

Type No. 168,115, ♂ ad., U. S. National Museum, Biological Survey collection, from Progreso, Yucatan, Mexico. Collected March 5, 1901, by E. W. Nelson and E. A. Goldman.

Distribution.—The arid coastal belt of northern Yucatan.

Specific characters.—A pallid species with general resemblance to *Troglodytes aedon aztecus* but with heavier bill and feet; shorter wings and tail, and more reddish brown suffusion, especially on underparts. Upperparts dull bister brown, becoming paler and more reddish on rump and tail; throat, middle of breast and abdomen white, lightly suffused with pale fulvous; sides of neck and body strongly suffused with dull reddish brown, darkest on flanks; under tail coverts whitish with narrow blackish bars narrowly bordered with dull reddish brown.

Dimensions of type.—Wing 50; tail 38; culmen 14; tarsus 18.

Remarks.—We found this wren very common among the scattered growth of mangroves over a broad salt flat bordering the lagoon back of Progreso. A few were seen in the brush-grown country adjoining the flats but the latter were apparently their home. They were in full song

the first of March and were about to breed. They were commonly seen probing for food in the clay mud on the flats and all the specimens killed had their feet and bills (to the angle of the gape) coated with dried mud.

Merula plebeia differens new subspecies. Forest Robin.

Type No. 142,532, ♂ ad., U. S. National Museum, Biological Survey collection, from Pinabete, Chiapas, Mexico. Collected February 8, 1896, by E. W. Nelson and E. A. Goldman.

Distribution.—Known only from type locality in southern Chiapas.

Subspecific characters.—Entire upperparts including head, wings and tail decidedly browner than in *M. plebeia;* lower parts more uniform and darker brown; throat uniform with breast with scarcely a trace of dark streaks; feet and bill darker than in *M. plebeia.*

Dimensions of type.—Wing 141; tail 105; culmen 23; tarsus 35.

Remarks.—Seen only in the heavy forest above 7500 feet.

Vol. XIV, pp. 177-178 September 25, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

GENERAL NOTES.

The bat genus Pteronotus renamed Dermonotus.

In 1815, Rafinesque, in his 'Analyse de la Nature' (p. 54), substituted *Pteronotus* in place of *Pteropus*, apparently simply because he did not like the latter name. Of course there was no justification for such a procedure and *Pteronotus* is a pure synonym of *Pteropus*. Nevertheless, the name was given and consequently its use for another genus precluded. However, Gray gave the same name in 1838 to a genus of Phyllostomoid bats, not knowing of its previous use by Rafinesque. As no other has been given to exactly the same type, a new one must be substituted and *Dermonotus* is appropriate, referring to the extension of the skin of the wings and interfemoral membrane upon the back.

Those mammalogists who rank *Pteronotus* and *Chilonycteris* as sections of one comprehensive genus for which the latter name has been used will be more reconciled to the change when they consider that a less serious one will be entailed. It has been generally overlooked that *Pteronotus* was published a year earlier than *Chilonycteris* (1838 instead of 1839) and consequently that name would have to be used instead of *Chilonycteris*, generally employed for the genus. An examination of the types of the two genera has led me to believe that the two groups should be regarded as generically distinct, if current views as to generic differentiation are to be adopted. — *Theodore Gill.*

An addition to the avifauna of the United States.

During the summers of 1892 and 1893, when accompanying the party then engaged in surveying and re-marking the boundary line between Mexico and the United States, Mr. Frank X. Holzner and I found the

Mexican Cliff Swallow, *Petrochelidon melanogaster* (Swainson), in abundance in the states of Chihuahua and Sonora, Mexico. It also crossed into Arizona, along the San Bernardino and Santa Cruz rivers, breeding on both sides of the international boundary line. Five or six specimens including adults of both sexes and young recently from the nest, were collected in Arizona, and are now in the United States National Museum.—*Edgar A. Mearns.*

A new Cypripedium.

Cypripedium veganum, n. sp.—Allied to *C. pubescens* and *C. parviflorum*. Differs from both, but especially from *parviflorum*, by the oblong stigma, rounded and almost truncate at the end. Agrees with *pubescens* in the large flowers, but the lip is very bright yellow as in *parviflorum*. Leaves and stems glabrous, with only a few scattered gland-hairs. Flowers very slightly fragrant.

Upper sepals as long as the lip; lower much shorter; petals narrow, longer than the lip, usually twisted. Lip much inflated, laterally compressed, pubescent at base within, speckled with dull red within, faintly speckled on outside above towards the apex; sterile stamen triangular, spotted like the lip. Leaves lanceolate. Stems a foot to a foot-and-a-half high.

Measurements in millimeters:—Upper sepals, length 35–45; lower, length 32–40; breadth, (two united) 15–19; petals, length 45–57; greatest breadth, 7; lip, length, 33–41; breadth, 14–19; sterile stamen, length, 14, breadth, 6.

Leaves with about 6 prominent and 6 weaker veins; average of the larger leaves, length, 135, breadth, 40.

Hab.—Sapello Canyon, Las Vegas Range, N. M., about 8000 ft. (Canadian Zone); in full flower in June. Many specimens examined. The type will be placed in U. S. National Museum.—*T. D. A. Cockerell and P. and M. Barker.*

A new name for Mus obscurus Miller.

The name *Mus obscurus* which I recently applied to a small rat from Tioman Island, off the east coast of the Malay Peninsula (Proc. Washington Acad. Sci., II, p. 213, August 20, 1900) is preoccupied by *Mus obscurus* Waterhouse (Proc. Zool. Soc. London, V, p. 19, 1837). It may therefore be replaced by *Mus pullus*.—*Gerrit S. Miller, Jr.*

Vol. XIV, pp. 179-180 September 25, 1901

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OF THE

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TWO NEW SUBTERRANEAN CRUSTACEANS FROM THE UNITED STATES.

BY W. P. HAY.

During a recent visit to the Mammoth Cave of Kentucky, and Nickajack Cave in Tennessee, the writer was fortunate enough to obtain from the former twelve specimens of a small eyeless shrimp, and from the latter about as many specimens of an Isopod crustacean belonging to the genus *Cæcidotea* Packard.

The shrimp on examination proves to be so distinct from all the *Palæmonidæ* hitherto described as to necessitate the erection of a new genus. The Isopod, as it came from the type locality of *Cæcidotea nickajackensis* Packard was at first thought to be that species, but a careful comparison with Dr. Packard's description and figures and with specimens of *C. nickajackensis* from wells at Metcalf, Georgia, shows that it is distinct.

The new genus and the two new species may be described as follows:

Palæmonias gen. nov.

Similar to *Palæmonetes* in form and in the absence of a mandibular palpus. Gills four and a rudiment on each side. Rostrum long, slender

and serrate above and below. Antero-lateral margin of carapace with two spines. First two pairs of ambulatory appendages sub-equal in size and similar in form; chelate and with large bunches of pectinate bristles on the distal extremities of the fingers. The articulation of the hand with the carpal segment is at a point on the lower surface of the hand some distance from the proximal end; and the prominent knob-like extremity fits, when the limb is fully extended, into a broad sinus formed by the margin of a plate-like expansion of the carpus.

Palæmonias ganteri sp. nov.

Carapace about one third the total length, very thin and delicate. Rostrum as long as the antennal scale, its upper surface with about fourteen small teeth, lower surface with two or three teeth. Eye stalks rudimentary and without pigment. Antennules bi-flagellate. Antennæ longer than the body. Color in alcohol white; in life nearly transparent. Length about one inch and a quarter.

Named for Mr. H. C. Ganter, the manager of the cave, who through his deep interest in the scientific study of its fauna and flora was led to afford me exceptional facilities for making my investigations.

Cæcidotea richardsonæ sp. nov.

Body slender but broader than in either *C. stygia* or *C. nickajackensis*. Margins of the head, body segments and telson hairy. Antennules as long as the peduncle of the antennæ, the flagellum with fifteen segments. Antennæ long and very slender, the flagellum with about sixty-five segments. Legs much longer than in the other species of this genus. Uropods of nearly uniform diameter throughout, slender, about one half as long as the body and thickly beset with short stiff hairs.

Color in life and in alcohol white.

Named for Miss Harriet Richardson, whose papers on North American Isopods are well known.

Vol. XIV, pp. 181-182 December 12, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

THE PROPER GENERIC NAMES OF THE VISCACHA, CHINCHILLAS, AND THEIR ALLIES.

BY J. A. ALLEN.

In a recent paper entitled, 'The Name of the Viscacha',* Mr. Oldfield Thomas leaves in doubt the proper allocation of the genus *Callomys* D'Orbigny and Geoffroy Saint-Hilaire. As the application of the generic names given to the different species of the Chinchillidæ is involved in some obscurity, a brief history of the case may serve to throw a little light on some of the intricate points.

The first distinctive generic name applied to any member of the group appears to be *Viscaccia* Schinz, given in 1825 to the Viscacha of the pampas of the La Plata. The next in order is the name *Lagostomus*, given by Brooks in 1828 to the same animal, which name thus becomes a synonym of *Viscaccia* Schinz. In 1829 Bennett used the name *Chinchilla* in a generic sense for the Chinchillas of the Chilian Andes. In 1830 Lichtenstein gave the name *Oriomys* also to the same animals. The other of the three generic groups of this family was named *Lagidium* by Meyen in March, 1833, and *Lagotis* by Bennett a few months later in the same year. Regarding the application of these names there is, apparently, no question. The

*Proc. Biol. Soc. Wash. XIV, p. 25, April 2, 1901.

case, however, is different with *Callomys* D'Orbigny and Geoffroy Saint-Hilaire mentioned above.

The authors of this genus included in it three species only, namely, *Callomys viscaccia*, *Callomys laniger*, and *Callomys aureus*. The first had already been assigned to the genus *Viscaccia* by Schinz, and upon the second the name *Chinchilla* had been bestowed by Brooks. This leaves the *Callomys aureus* only for consideration. *Callomys aureus* is based on furrier's skins, lacking the feet, the ears and the tail, and, of course, the skull; consequently the species may be treated as indeterminable and consequently *Callomys* is indeterminable. Waterhouse and others have considered *Callomys aureus* as referable to the genus *Lagidium*, but it would seem an unwarranted proceeding to displace *Lagidium* with the name *Callomys* on the basis of a species so imperfectly described as *C. aureus*. It hence seems proper to recognize for the three genera of the *Chinchillidæ* the names *Viscaccia*, *Chinchilla*, and *Lagidium*.

VOL. XIV, PP. 183-185 DECEMBER 12, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

NOTE ON THE NAMES OF A FEW SOUTH AMERICAN MAMMALS.

BY J. A. ALLEN.

A recent examination of G. Fischer's 'Zoognosia' (Vol. III, 1814), shows that a number of the names currently attributed to later authors originated with Fischer; also that a few of Fischer's names for South American mammals antedate those of Wied and Schinz. Among the former may be mentioned *Felis eyra*, *Nasua rufa*, and *Nasua fusca*, usually attributed to Desmarest, 1820, but all date from Fischer 1814; also *Dasypus villosus*, attributed to Desmarest 1819, dates from Fischer 1814. *Nasua sociabilis* Wied, 1826, is antedated by *Nasua sociabilis* Schinz, 1821.

Dasypus cilliatus Fischer, 1814, antedates *Dasypus patagonicus* Demarest 1819. This species will consequently stand as *Zaëdyus cilliatus* (G. Fischer).

A comparison of Schinz's 'Thierreich', 1821, with Wied's 'Reise nach Brasilien', 1822, and Wied's Beiträge zur Naturgeschicte von Brasilien' (II, 1826) shows that Schinz was the first to publish a number of the names attributed by him to Wied, and since thus generally accredited. Apparently not only Schinz, Kuhl, and Temminck had access to Wied's collections but in many cases adopted and published his manuscript names several years before Wied published them himself,

so that the author for the name is, in many cases, not Wied, as usually given, but Schinz, Kuhl, or Temminck. In some cases, however, the names used by these authors differ from those adopted later by Wied; for example, *Desmodus rufus* Wied is antedated by *Rhinolophus ecaudatus* Schinz, so that the name *Desmodus rufus* Wied should give place to *Desmodus ecaudatus* (Schinz). *Felis wiedi* Schinz, 1821, antedates *Felis macroura* Wied, 1826. *Canis azarae* Wied, 1826, is also antedated by *Canis brasiliensis* Schinz, 1821, although the name *Canis brasiliensis* is attributed by Schinz to "Neuwied". Schinz also employes the name *Felis brasiliensis* (ex Wied) for the Black Jaguar, previously named *Felis nigra* by Erxleben which Wied finally did not see fit to designate by a technical name. But *Felis brasiliensis* Schinz renders untenable *Felis brasiliensis* F. Cuvier, 1828, applied to another animal.

It may be further noted in this connection that in all probability *Vespertilio villosissimus* E. Geoffroy, 1807, based on the Chauve-souris septième of Azara, will have to be adopted for the Bat named *Vespertilio bonariensis* Lesson & Garnot, 1820, and now commonly known as *Lasiurus bonariensis*, but which should stand as *Lasiurus villosissimus*. That Azara's Chauve-souris septième is not referable to the *Lasiurus cinereus* group, as stated by Mr. Thomas (Ann. and Mag. Nat. Hist., (7) Vol. VIII, Nov., 1901, p. 435), is evident from its small size, which barely equals that of an average example of *L. borealis*.

As is well known, Dr. J. E. Gray gives many new names to mammals in Volume V (1827) of Griffith's 'Animal Kingdom', most of which are duly cited in synonomy, but some appear to have escaped notice. Gray divided the genus *Vampyrus* into three genera, which he named *Vampyrus*, *Istiophorus*, and *Tonatia*. *Vampyrus* is restricted to *V. spectrum*;, *Istiophorus* is preoccupied by Lacépède for a genus of fishes, and has been replaced by Gray's latter name *Trachops; Tonatia* has for its type and only species *V. bidens* Spix, and is thus the exact equivalent of Mr. Thomas's subgenus *Vampyressa* (1900). These divisions of *Vampyrus* established by Gray in 1827 appear to have been overlooked by later systematic writers.*

*Since writing the above my attention has been called to the fact that Dr. T. S. Palmer, in 1898, called attention to Gray's treatment of *Vampyrus* (*cf.* Proc. Biol. Soc. Wash. XII, 1898, p. 111).

Another name proposed by Gray in the same work (Griffith's An. King. V, 1827, 228), is *Sicista*, which has as its type and only species *Mus subtilus* Pallas, which is also the type of the later *Sminthus* Keys. & Bl., 1840. The species currently referred to *Sminthus* will thus stand as follows: (1) *Sicista subtilus* (Pallas); (2) *Sicista concolor* (Büchn); (3) *Sicista lathemi* (Thomas); (4) *Sicista flavus* (True). It also follows that the subfamily named Sminthinæ must give place to Sicistinæ.

VOL. XIV, PP. 187-188 DECEMBER 12, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

SEVEN NEW BIRDS FROM PARAGUAY.

BY HARRY C. OBERHOLSER.

A small collection of birds from Sapucay, Paraguay, collected by Mr. William T. Foster for the United States National Museum contains the following apparently new species, descriptions of which, through the courtesy of the authorities of the National Museum, are here published. Full details of these together with various other critical notes will appear in a paper now in course of preparation.

Anabazenops acritus sp. nov.

Similar to *Anabazenops oleagineus* but decidedly darker, particularly below; the color throughout greenish olive instead of olive brown; the throat more yellowish; the light areas of the lower surface more greenish.

Leptopogon amaurocephalus icastus subsp. nov.

Similar to *Leptopogon amaurocephalus tristis*, but larger; less purely yellow below; crown rather more brownish; the wing-bands pale ochraceous; instead of clear yellow.

Arremon callistus sp. nov.

Similar to *Arremon polionotus* but upper parts darker; wings with hardly any indication of a greenish yellow humeral patch; edge of wing at bend, white; black jugular band wider.

Cyanocompsa sterea sp. nov.

Resembling *Cyanocompsa cyanea* but bill much smaller; blue of forehead less purplish; female much darker, less rufescent brown.

Thamnophilus ochrus sp. nov.

Resembles *Thamnophilus caerulescens*, but the female is very much paler both above and below, with the breast pale grayish ochraceous, the middle of abdomen buffy white, and all the superior wing-coverts black tipped with white.

Basileuterus leucoblepharus calus subsp. nov.

Similar to *Basileuterus leucoblepharus leucoblepharus*, but flanks grayish; crissum very pale yellowish; sides and breast heavily shaded with slate gray; back and rump less yellowish olive green.

Picolaptes tenuirostris apothetus subsp. nov.

Similar to *Picolaptes tenuirostris tenuirostris* but much smaller; the shaft streaks on back decidedly narrower.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

DIAGNOSES OF EIGHT NEW BATRACHIANS AND REPTILES FROM THE RIU KIU ARCHIPELAGO, JAPAN.

BY LEONHARD STEJNEGER.

BATRACHIA SALIENTIA.

Microhyla okinavensis new species.

Diagnosis.—Toes not dilated at tip, distinctly webbed at base; metatarsal tubercles rather large. Otherwise like *Microhyla fissipes*.

Habitat.—Okinawa Shima, Riu Kiu Archipelago.

Type.—Science College Museum, Tokyo, No. 25a.

Rana narina new species.

Diagnosis,—No glandular dorso-lateral fold; tips of toes dilated into very small discs much smaller than tympanum which is perfectly distinct; no free papilla on middle of tongue; toes more than half webbed; vomerine teeth in two nearly straight series between the choanæ; belly smooth; inner metatarsal tubercle narrow, very slightly prominent, less than one half the length of inner toe; no outer tubercle; tibiotarsal joint extends considerably beyond snout; snout long, nostrils near end of snout.

Habitat.—Okinawa Shima, Riu Kiu Archipelago.

Type.—Science College Museum, Tokyo, No. 19a.

Rana namiyei new species.

Diagnosis.—No glandular dorsol-lateral fold; tips of toes slightly dilated at tips; no free papilla on middle of tongue; lower jaw with a pair of tooth-like bony prominences in front; toes webbed to extreme tips; interorbital width much greater than width of eyelid; vomerine teeth in two rather large, very oblique groups behind the choanæ; inner metatarsal tubercle prominent, nearly as long as diameter of eye; fourth toe nearly one-third longer than fifth.

Habitat.—Okinawa Shima, Riu Kiu Archipelago.

Type.—Science College Museum, Tokyo, No. 31a.

Named for Mr. M. Namiye of the Imperial University, Tokyo.

Buergeria ijimæ new species.

Diagnosis.—Color brownish; fingers free; first finger longer than second; upper surface nearly smooth; tibia more than one-half the total length of head and body.

Habitat.—Okinawa Shima, Riu Kiu Archipelago.

Type.—Science College Museum, Tokyo, No. 19(914).

Named in honor of Prof. Isao Ijima, Imperial University, Tokyo.

Buergeria ishikawæ new species.

Diagnosis.—Color brownish; fingers free; first finger longer than second; upper surface excessively warty, the warts grouped in round clusters of smaller ones surrounding a larger; tibia not more than one-half the total length of head and body.

Habitat.—Okinawa Shima, Riu Kiu Archipelago.

Type.—National Museum, Uyeno Park, Tokyo, No. 30.

Named in honor of Prof. C. Ishikawa, of the Imperial University, Tokyo.

REPTILIA.

SAURIA.

Eumeces kishinouyei new species.

Diagnosis.—24 to 26 scale rows round the middle of the body; usually a post-nasal; first supralabial forming sutures with nasals and second labial only; two unpaired post-mentals; lower temporal of second row largest, wedge-shaped; soles with two series of enlarged tubercles be-

tween heel and base of third and fourth toes; normally three pairs of nuchals.

Habitat.—Islands of Yayeyama group, Riu Kiu Archipelago.

Type.—Science College Museum, Tokyo, No. 22.

Named for Dr. K. Kishinouye, Imperial Fisheries Bureau, Tokyo.

SERPENTES.

Calamaria pfefferi new species.

Diagnosis.—Four supralabials, first slightly shorter than second; first pair of infralabials forming a suture behind mental; no azygos shield between anterior chin-shields; frontal longer than broad, about four times as broad as supraocular; one preocular; tail pointed; subcaudals 15-26 pairs; no light or dark colored collar; no spot on upper side of tail; ventral surface light-colored with two irregular rows of very distinct dark brown spots; tail underneath with a median brown longitudinal band.

Scale formula.—13 scale rows; 158–160 ventrals; $\frac{15}{15}-\frac{26}{26}$ subcaudals.

Habitat.—Miyako Shima, Yayeyama group, Riu Kiu Archipelago.

Type.—Science College Museum, Tokyo, No. 14.

Named in honor of Dr. G. Pfeffer, curator in the Natural History Museum, Hamburg.

Disteira orientalis new species.

Diagnosis.—Maxillary teeth all grooved; two pairs of chin-shields in contact; 23 to 25 scales round the neck, 32 to 35 round the body; frontal shield more than twice as long as broad, longer than its distance from rostral and equalling the parietals; a single anterior temporal; rostral slightly broader than deep; ventrals 326 to 341; one or two postoculars; scales strongly keeled; ventrals, except the most anterior ones, bituberculate. Yellow with black rings wider on the back and belly, and confluent on the anterior third of the latter into a black ventral band; head black with irregular yellow marks on anterior half and behind eyes.

Habitat.—Riu Kiu Seas.

Type.—Science College Museum, Tokyo, No. 29. Collected in Okinawa Shima.

Remarks.—I have examined two additional specimens in the Hamburg Museum (Nos. 2574, a-b) collected by Mr. Lenz on Iriomote Shima, Yayeyama group, on March 13, 1897. Also a specimen in the Leyden Museum (No. 1483) collected by von Siebold in "Japan".

VOL. XIV, PP. 193-194 DECEMBER 12, 1901

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW WHITE-FOOTED MOUSE FROM CALIFORNIA.

BY WILFRED H. OSGOOD.

The mouse here described is a slightly characterized form of the '*austerus-canadensis* group' which is one of several in the genus *Peromyscus* well known to be very much in need of thorough revision. Until such revision can be made it seems best to treat this form as a subspecies of *Peromyscus oreas** which is apparently its nearest relative. It occupies the humid coast strip of northern California, having a range coinciding with that of a number of mammals and birds belonging to groups which reach their highest development farther north. It is thus the only member of the *austerus-canadensis* group found within the State of California.

Peromyscus oreas rubidus subsp. nov.

Type from Mendocino City, Mendocino Co., California. No. 91,650 Biological Survey Coll., ♀ yg-ad. Collected Nov. 17, 1897 by J. A. Loring. Orig. No. 1,925.

Distribution.—Coast region of northern California and southern Oregon, extending south at least as far as Cazadero, California, or nearly through the redwood strip.

Characters.—Similar to *Peromyscus oreas* but with shorter tail and smaller hind foot; general color, particularly in summer, shades of ruddy brown or chocolate instead of shades of brown tinged with yellowish. Similar to *Peromyscus austerus* but somewhat larger and lighter in color. Skull similar to that of *P. oreas*, well distinguished from that of *P. austerus*.

Color.—*Type* (in worn summer pelage): Upperparts brownish fawn

* Bangs, Proc. Biol. Soc. Wash. XII, 83-84, Mar. 24, 1898.

with an evident dark median dorsal line, sides brownish fawn, being of a shade somewhat between the chocolate and fawn color of Ridgway (Pl. III, figs. 2 and 22); ears lightly edged with whitish, lanuginous tufts usually with a few white or whitish hairs; dark spot at base of whiskers nearly obsolete; underparts white; tail sharply bicolor.

Skull.—Not definitely distinguishable from that of *Peromyscus oreas;*† decidedly larger and heavier than in *P. austerus;* braincase fuller and wider; rostrum and infraorbital region heavier; audital bullæ larger.

Measurements.—Although the skull of *P. rubidus* is not appreciably smaller than that of *oreas* the hind foot is constantly smaller and the tail shorter. The following table indicates this difference.

Peromyscus oreas.

Number.	Sex.	Locality.	Length.	Tail.	Hind foot.
3,696‡	♀	Mt. Baker Range, B. C.	200	101	24
3,694‡	♂	" " " "	207	114	24
89,861	♀	Mt. Rainier, Wash.	206	112	24
89,863	♀	" " "	204	118	23
89,870	♀	" " "	210	117	23
90,077	♂	" " "	197	107	23
		Average, 6 adults.	204	111	23.5

Peromyscus oreas rubidus.

Number.	Sex.	Locality.	Length.	Tail.	Hind foot.
91,650	♀	Mendocino, Calif.	203	99	21
91,648	♀	" "	189	99	21
91,647	♂	" "	190	95	22
98,401	♀	Briceland, Calif.	200	100	22
98,402	♂	" "	180	90	21
97,232	♀	Hoopa Valley, Calif.	200	96	22
		Average, 6 adults.	193	96	21.5

†In the series before me the nasals are very slightly longer in *oreas* than in *rubidus* but it does not seem safe to assume that this slight difference is constant.

‡Coll. of E. A. and O. Bangs.

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